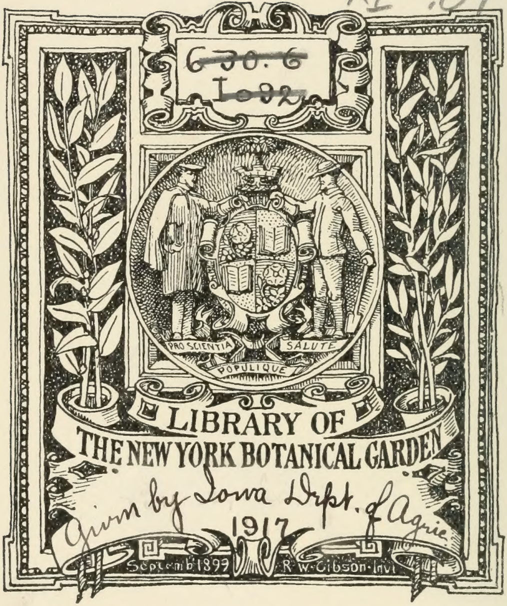
SHOUT
SHARE
IT

XI .09



~~630.6~~
~~Io82~~

PRO SCIENTIA
POPULIQUE
SALUTE

LIBRARY OF
THE NEW YORK BOTANICAL GARDEN

Given by Iowa Dept. of Agric.
1917

Septemb 1899
R W Gibson Invt

SEVENTEENTH ANNUAL

IOWA YEAR BOOK OF AGRICULTURE

ISSUED BY THE

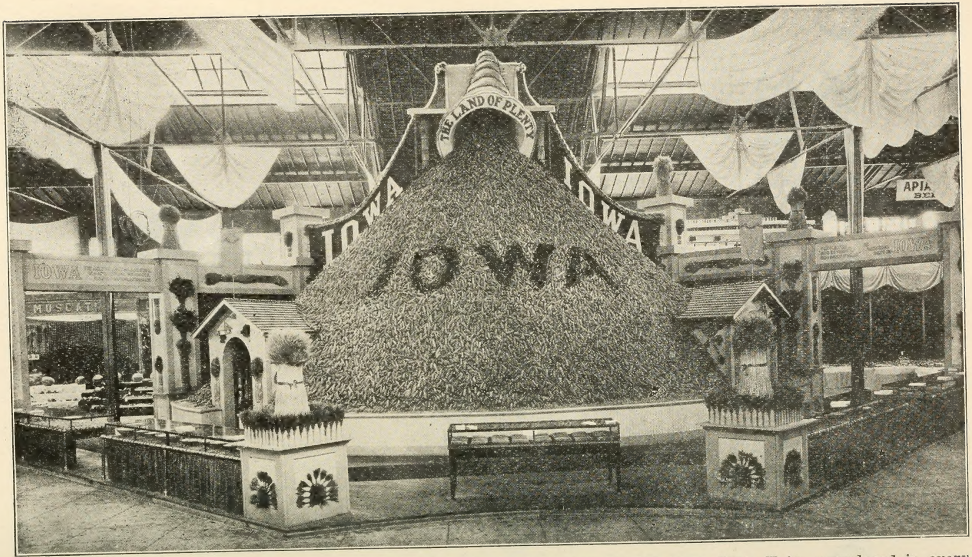
IOWA DEPARTMENT OF AGRICULTURE

1916

LIBRARY
NEW YORK
BOTANICAL
GARDEN.

Published by
THE STATE OF IOWA
DES MOINES

.09
1916


THE LAND OF PLENTY
IOWA
IOWA
IOWA
IOWA
MUSCATI
APIA

The Horn of Plenty, the beautiful exhibit so typical of Iowa, shown at the 1916 Iowa State Fair, reproduced in every item and particular as it appeared at the Panama Pacific Exposition in 1915.

LETTER OF TRANSMITTAL

Office of Iowa State Department of Agriculture.

Des Moines, Iowa, July 1, 1917.

To His Excellency, W. L. Harding, Governor of Iowa:

Sir: I have the honor to transmit herewith the Seventeenth Annual Iowa Year Book of Agriculture for the year 1916.

Arthur R. Corey,
Secretary State Board of Agriculture.

INTRODUCTORY

Volume Seventeen of the Iowa Year Book of Agriculture is hereby submitted.

Measured by the material standard of financial prosperity the year 1916 proved the most extraordinary in the entire history of the state. This, too, in spite of the fact that the yield of potatoes was less than 40 per cent of the normal Iowa crop, while the total yield of wheat was also far below the average of recent years. Iowa's staple crop, corn, untouched by frost, was highly satisfactory in both quality and quantity. Oats of excellent quality and well up toward the high mark of the previous year, which was the highest in the history of the state. The combined value of farm products, livestock, poultry and dairy products amounted to more than $1,250,000,000!

The spirit of enterprise and progress was plainly discernible in farming operations throughout the state, with a very pronounced disposition to adopt improved methods. The county agent movement made considerable progress. In the northern and northeastern parts of the state the cow-test work was pushed and did more, probably, than any other one influence to boost and popularize the dairy industry. Hundreds of new silos were built and filled. The tractor occupied a larger place in farming operations than ever before and helped materially to solve the perplexing problem of farm labor. Auction sales of purebred stock were numerous, with values climbing steadily upward. On the whole it was a satisfactory year for agricultural Iowa, and furnished still further evidence of an indisputable character to clinch the claim that Iowa is the greatest agricultural state in the Union.

Part I—Presents a summary of the proceedings of the various meetings held by the Iowa State Board of Agriculture during the year.

Part II—Report of the annual State Agricultural Convention held December 13 in the agricultural rooms of the state house at Des Moines. It includes the president's address, reports of the secretary and treasurer, also a report, financial and otherwise, of the county fairs of the state.

Part III—Proceedings of the Ninth Annual Meeting of the County and District Fair Managers of the state, held in Des Moines, December 12.

Part IV—Premium awards made at the 1916 state fair; also excerpts from press reports of the fair published in farm and stock journals.

Part V—Extracts from the State Dairy and Food Commissioner's annual report, containing interesting information concerning the dairy industry of the state.

Part VI—Proceedings of the Fortieth Annual Convention of the Iowa State Dairy Association.

Part VII—Excerpts from the report of the proceedings of the annual meeting of the Corn Belt Meat Producers' Association.

Part VIII—Bulletins and papers of interest to growers of livestock and farm workers in general.

Part IX—Report of the State Veterinarian covering the two-year period, 1915-1916.

Part X—Annual report of the Iowa Weather and Crop Service Bureau, summarizing weather and crop conditions by months for the entire year.

Part XI—Livestock, crop and general farm statistics for the year ending December 31, 1916, collected by the township assessors and reported to the department by the county auditors.

Part XII—Presenting statistics of livestock and farm crops in Iowa; also the livestock and crop statistics of the United States by states, and of the various countries of the earth. Figures furnished by the United States Department of Agriculture.

Part XIII—Directory of organizations and associations representing the livestock, dairy and agricultural interests of the state.

STATE BOARD OF AGRICULTURE

1917

EX-OFFICIO MEMBERS

Governor of State	Des Moines
President Iowa State College	Ames
State Dairy Commissioner	Des Moines
State Veterinarian	Des Moines

OFFICERS.

C. E. Cameron, *President*	Alta
O. A. Olson, *Vice-President*	Forest City
A. R. Corey, *Secretary*	Des Moines
W. W. Morrow, *Treasurer*	Afton

DISTRICT MEMBERS.

First District—C. H. Tribby	Mount Pleasant
Second District—E. T. Davis	Iowa City
Third District—Elmer M. Reeves	Waverly
Fourth District—E. J. Curtin	Decorah
Fifth District—Cyrus A. Tow	Norway
Sixth District—T. C. Legoe	What Cheer
Seventh District—Chas. F. Curtiss	Ames
Eighth District—Frank E. Sheldon	Mount Ayr
Ninth District—Chas. Escher, Jr.	Botna
Tenth District—John P. Mullen	Fonda
Eleventh District—H. L. Pike	Whiting

The President, Vice-President, Secretary and Treasurer are elected for one year.

Terms of Directors from odd-numbered districts expire second Wednesday in December, 1917. Terms of Directors from even-numbered Districts expire second Wednesday in December, 1918.

COMMITTEES

YEAR 1917

EXECUTIVE

C. E. Cameron
O. A. Olson
A. R. Corey

AUDITING

J. P. Mullen
F. E. Sheldon
E. M. Reeves

RESOLUTIONS

E. J. Curtin
C. H. Tribby
F. E. Sheldon

POWERS AND DUTIES OF BOARD

C. E. Cameron
O. A. Olson
A. R. Corey
E. M. Reeves
C. F. Curtiss

ADULTERATION OF FOODS, SEEDS AND OTHER PRODUCTS

R. A. Pearson
Cyrus A. Tow
W. B. Barney

NOXIOUS WEEDS, FUNGUS DISEASE IN GRAINS, GRASSES, PLANTS, ETC.

E. M. Reeves
Chas. Escher, Jr.
E. T. Davis

DAIRYING AND DAIRY PRODUCTS

W. B. Barney
C. F. Curtiss
Chas. Escher, Jr.

ANIMAL HUSBANDRY

C. F. Curtiss
H. L. Pike
J. I. Gibson

LEGISLATIVE

C. E. Cameron
O. A. Olson
A. R. Corey
J. P. Mullen
E. J. Curtin

REVISION OF PREMIUM LIST, RULES AND REGULATIONS

C. E. Cameron
O. A. Olson
A. R. Corey
T. C. Legoe
C. F. Curtiss
H. L. Pike

ILLUSTRATIONS

Boys' camp, 1916 Iowa State Fair 388

Cattle—

- Grade Aberdeen-Angus steer, champion 192
- Grade Shorthorn steer, champion 190
- Hereford calf, first prize senior heifer 181
- Hereford steer, first prize two-year old 195
- Hereford steers, first prize group 185
- Shorthorn bull, first prize junior yearling 178
- Shorthorn steer, prize winning senior yearling 201
- Shorthorn steers, first prize group 197

County Exhibits 649,650

Evergreen trees for Iowa 438, 440, 441, 442, 444, 445, 446, 448, 449, 451, 452, 454, 456, 457, 458, 459, 461, 462

Farm exhibits, individual 436

Food values, charts 337, 338

Hog cholera, maps showing number of hogs lost in Iowa in 1913 and 1916 .... 484, 485

Horn of Plenty .... Frontispiece

Horses—

- Belgian mare, first prize winner 163
- Belgian mare and foal, first prize winners 165
- Belgian stallion, first prize winner futurity division 160
- Belgian stallion, prize winner 159
- Belgian stallion, first prize two-year old 171
- Belgian stallion, bred by exhibitor, first prize winner 173
- Belgian stallions, Iowa bred 176
- Belgian stallions, champion 161
- Percheron mares, first prize team 157
- Percheron stallions, grand display 155
- Draft horses and ponies 167

Isotherms and prevailing winds, map 548

Mule, champion 175

Precipitation for year 1916, map 549

Sterilizer for farm dairy utensils 353, 354, 355, 356, 357, 358, 359

Swine—

- Chester White sow, champion 209
- Hampshire sow, grand champion 211
- Poland China sow, grand champion 205

TABLE OF CONTENTS

Letter of Transmittal.
Introductory.
State Board of Agriculture.
Standing Committees.
Index to Illustrations.
Table of Contents.

PART I.

Synopsis of Proceedings of the State Board of Agriculture and Executive and Special Committee Meetings from December 20, 1915 to December 14, 1916, inclusive.

PART II.

Proceedings of State Agricultural Convention, December 13, 1916.

PART III.

Proceedings of Ninth Annual Meeting of Iowa County and District Fair Managers' Association, December 12, 1916.

PART IV.

Iowa State Fair and Exposition, 1916, Official Live Stock and Other Awards, and Agricultural Press Reports of the Fair.

PART V.

Extracts from State Dairy and Food Commissioner's Report.

PART VI.

Proceedings of the Fortieth Annual Convention of the Iowa State Dairy Association.

PART VII.

Proceedings of the Annual Meeting of the Corn Belt Meat Producers' Association.

PART VIII.

Papers and Bulletins on Live Stock, Agricultural and Miscellaneous Topics.

PART IX.

Report of the State Veterinary Department.

PART X.

Annual Report of the Iowa Weather and Crop Service Bureau.

PART XI.

Crop and Other Farm Statistics for the Year Ending December 31, 1916, Collected by Township Assessors and Reported to the Department by the County Auditors.

PART XII.

Statistical Tables of Iowa's Principal Farm Crops. Also Statistical Tables of the Principal Farm Crops and Live Stock by States, the United States, and the World.

PART XIII.

Directory of Organizations and Associations Representing Agricultural Interests in Iowa.

IOWA'S SOURCE OF WEALTH

FOR THE YEAR ENDING DECEMBER 31, 1916

COMPILED FOR THE IOWA YEAR BOOK OF AGRICULTURE FROM ESTIMATES FURNISHED BY THE IOWA WEATHER AND CROP SERVICE.

ACREAGE, PRODUCTION, AVERAGE YIELD, VALUE TO THE ACRE AND TOTAL VALUE OF FARM PRODUCTS FOR THE YEAR 1916.

	Acres	Average Yield	Average Price	Total Yield	Total Price
Corn	9,818,500	35.3 bu.	$ .81	346,193,200	$280,416,500
Oats	4,979,800	37.0 “	.49	184,131,000	90,224,190
Spring wheat	142,990	13.4 “	1.54	1,927,280	2,968,011
Winter wheat	448,945	17.5 “	1.58	7,858,900	12,417,062
Barley	197,000	30.7 “	.90	6,039,930	5,435,937
Rye	55,745	22.8 “	1.15	1,270,590	1,461,178
Flax seed	5,445	10.3 “	2.06	56,015	115,390
Timothy seed	312,180	4.5 “	2.18	1,404,810	3,061,485
Clover seed	59,766	1.6 “	9.29	95,625	888,356
Potatoes	101,390	42.3 “	1.75	4,287,600	7,503,300
Hay (tame)	3,240,600	1.8 tons	9.00	5,929,720	53,367,480
Hay (wild)	507,497	1.4 “	7.89	724,377	5,715,334
Alfalfa	154,880	4.4 “	11.71	688,047	8,057,030
Pasturage and grazing				Estimated	96,000,000
Ensilage				“	6,600,000
Sweet corn				“	500,000
Pop corn				“	234,420
Fruit crop				“	7,500,000
Garden truck				“	4,700,000
Miscellaneous				“	10,000,000
Total					$597,165,673
Dairy products				Estimated	80,000,000
Poultry and eggs				“	51,000,000
Wool				“	1,000,000
Total value farm products					$729,165,673

NUMBER, AVERAGE VALUE AND TOTAL VALUE OF LIVE STOCK

DECEMBER 31, 1916.

Figures taken from Estimates by the United States Department of Agriculture.

	Number	Average Value	Total Value
Horses	1,552,000	$107.00	$166,064,000
Mules	62,000	116.00	7,192,000
Milk cows	1,405,000	66.50	93,432,000
Other cattle	2,754,000	43.20	118,973,000
Swine	9,370,000	14.70	137,739,000
Sheep	1,240,000	8.80	10,912,000
Total value of live stock			$534,303,000
Total value farm products and live stock			$1,263,468,673

PART I

Synopsis of Proceedings of Iowa State Board of Agriculture and Committee Meetings. From December 10, 1915 to December 14, 1916.

EXECUTIVE COMMITTEE MEETING

December 10, 1915.

Committee met with members Cameron, Olson and Corey present.

The committee instructed the secretary to notify all parties interested in the protest of awards in the Percheron filly section that there would be a hearing before the committee at 2:30 p. m. Monday, December 20.

Committee approved payment of the bill for five shares of stock in the International Motor Contest Association amounting to $50.

The secretary was instructed to write the secretary of the Middle West state fairs calling a meeting of these fairs at the Auditorium Hotel in Chicago on February 16-17 to consider propositions for music and attractions at the 1916 fairs.

The committee announced the appointment of the following department superintendents:

SUPERINTENDENTS OF DEPARTMENTS, 1916.

Admissions	O. A. Olson, Forest City, Director in Charge;
	N. W. McBeath, Whiting, Supt.
Live stock sanitation	J. I. Gibson, Des Moines
Horses, ponies and mules	Charles F. Curtiss, Ames
Speed	E. J. Curtin, Decorah
Cattle	H. L. Pike, Whiting
Swine	Cyrus A. Tow, Norway
Poultry	C. H. Tribby, Mt. Pleasant
Implements and machinery	J. P. Mullen, Fonda
Dairy	W. B. Barney, Des Moines
Horticulture	Elmer M. Reeves, Waverly
Floriculture	Wesley Greene, Des Moines
Exposition building, textile, china, etc.	T. C. Legoe, What Cheer
School exhibits	E. C. Bishop, Ames

Boys' camp	Fred M. Hansen, Ames
Boys' judging contest	E. F. Ferrin, Ames
Publicity and advertising	Ivanhoe Whitted, Des Moines

The committee approved payment of bills.

SPECIAL COMMITTEE MEETING

December 20, 1915

The special committee composed of Cameron, Olson, Curtiss and Corey met in the rooms of the Department of Agriculture at 2:30 Monday, December 20, for the purpose of taking further evidence and considering the evidence on file in regard to the protest of awards in the filly section of the National Draft Horse Breeders' Futurity. Additional affidavits were filed by Mr. W. M. Tice and Mr. Tice also appeared in person before the committee and gave further evidence in the case. After giving due consideration to the affidavits on file and to the testimony presented by the witnesses at the hearing on September 25 and December 20 the following rseolution was offered and unanimously adopted by the committee.

Des Moines, Iowa, Dec. 20, 1915.

In the case of the protest filed on August 31, 1915, by W. M. Tice of Sulley, Iowa, against the exhibition of Ophelia, 112945, catalog number 200, in the yearling Percheron Futurity class at the 1915 Iowa State Fair, on the ground that said mare is more than a yearling and not a purebred Percheron, the special committee of the Iowa Board of Agriculture to whom this case was referred hereby sustains said protest for the reason that evidence which the committee regards as conclusive has been furnished to the effect that Keota May 20242, the dam of this mare, according to the certificate of registry, did not produce a foal in 1914. The committee therefore rules that Ophelia was ineligible to show in the yearling Percheron filly class at the Iowa State Fair in August, 1915, and the prize awarded to Ophelia be withdrawn and the animals next in succession in the prize list be moved up one place.

Special Committee—C. E. Cameron, O. A. Olson, A. R. Corey, C. F. Curtiss.

EXECUTIVE COMMITTEE MEETING

December 20, 1915.

Members present: Cameron, Olson, Corey.

The committee approved the bond of $10,000 for A. R. Corey, Secretary, and the same was filed with the Secretary of State.

The committee also approved the $100,000 bond for W. W. Morrow, Treasurer, and the same was placed on file in the department.

As per orders of the State Board of Agriculture the president and secretary signed orders on the state auditor for $1,000 appropriation for insurance and improvements at the state fair grounds; also for $2,400 for the support of the office of the department of agriculture as provided for in Section 1657-t, Supplement to the Code, 1913.

The secretary presented propositions for advertising hangers for the 1916 fair as submitted by the Kenyon Printing Company of Des Moines and the Thomas D. Murphy Company, Red Oak. The secretary was authorized to order 5,000 at 14 cents each, as per the proposition submitted by the Kenyon Printing Company, Des Moines.

SPECIAL COMMITTEE MEETING

January 20

The committee met on January 20 with the following members present: Cameron, Olson, Corey and Curtiss.

The committee and Dean Curtiss, Superintendent of the Horse Department went over the revision of the classification for the horse department.

It was also decided to change the closing date for nominations in the draft horse futurity from April 1 to May 1.

The secretary was instructed to pay the balance of the premiums in the Percheron filly section of the draft horse breeders' futurity in accordance with the findings of the special committee on December 20; also send the exhibitors the ribbons for this class.

The secretary presented the proposition from the National Duroc Jersey Record Association wherein they propose to establish a Duroc Jersey Futurity at the Iowa State Fair and guarantee it to be worth $400 providing our management contributes $100 of this amount. The committee agreed to make this subscription.

EXECUTIVE COMMITTEE MEETING

January 21

Members present, Cameron, Olson and Corey.

The claim of Mrs. E. W. Stone was presented to the committee and it was decided to pay Mrs. Stone $2.50 a day for the work she did at home in connection with the Baby Health Contest and $3.50 a day for the work done on the catalog and assignments prior to the fair and the work she did during the fair in connection with the Baby Health Contest.

The committee decided to place $13,000 wind storm insurance on the sheep barn at $3 per thousand for the three-year period.

The committee instructed the secretary to rent the twelve acres of ground north of the fair grounds and instruct the superintendent to put the same into crop.

Sestier Brothers, Des Moines, Iowa, were given the privilege of selling cabbage, rutabagas, etc., to the sheep exhibitors, the concession being ten per cent of the gross receipts.

The committee accepted the offer of W. J. Kennedy of a $50 loving cup to be awarded the boy winning first place in the Boys' Judging Contest.

The committee approved the ground permit made with the Seick Tent and Awning Company to erect a building for storage purposes on lot 2 on the camp grounds.

The committee approved the plan presented by Dr. Means for designating the week of the Iowa State Fair as Better Baby Week in Iowa.

The secretary was instructed to notify members of the board that there would be a meeting of the State Board of Agriculture at nine a. m. Wednesday and Thursday, February 9 and 10 and also suggest to them that they arrive in time for the spring stallion show, February 8.

The committee approved payment of bills.

MEETING STATE BOARD OF AGRICULTURE

February 8

The board convened at eight o'clock p. m. at the Savery Hotel. President Cameron presided:

The following members answered to roll call: Cameron, Olson, Corey, Tribby, Phillips, Reeves, Curtin, Tow, Curtin, Pike.

The minutes of the meeting of the State Board of Agriculture December 9 and the minutes of the Executive Committee Meeting up to and including the meeting on January 21 were read and approved.

The matter of admitting autos after five o'clock p. m. without charge was discussed by the board. Mr. Reeves moved that autos and other passenger carrying vehicles be admitted free after five o'clock p. m. each day of the fair. Seconded by Mr. Tribby. Motion carried.

Mr. Phillips moved that old soldiers, their wives, and widows of old soldiers be granted free admission each day of the fair under the following regulations: Soldiers wearing the bronze button or by presenting discharge or pension papers; the wives of soldiers when accompanied by their husbands, and widows with their pension papers or their husband's discharge papers. Seconded by Olson. Motion carried.

It was the wish of the board that the speed program on Thursday, August 31 be so arranged that the grand live stock parade might take place at four p. m.

It was the opinion of the board that it would be well to designate Tuesday, August 29 as Futurity Day and judge the draft horses, Shorthorn and other futurities on this day.

The board discussed the advisability of reproducing the Iowa Agricultural exhibit at the Panama Pacific Exposition commonly known as "The Horn of Plenty." Mr. Reeves moved that the Executive Committee be instructed to reproduce this exhibit, provided same could be done at a reasonable expense.

The board discussed at length the matter of reducing the cost of the fair. The Executive Committee recommended that in their opinion the expense of the 1916 fair might be reduced to $160,000 without crippling any department or making the fair less attractive to the public and exhibitors.

MEETING STATE BOARD OF AGRICULTURE.

February 9, 1916

The board convened at the office of the Department of Agriculture in the State House at nine o'clock a. m. with President Cameron in the chair. The following members answered to roll call: Cameron, Olson, Corey, Tribby, Phillips, Reeves, Curtin, Tow, Curtiss, Pike, Sheldon, Morrow.

The minutes of the board meeting on February 8 were read and approved.

The secretary read to the board the resignation of Mr. J. F. Summers as member from the ninth district, which reads as follows:

Chicago, Illinois, Feb. 3, 1916.

Iowa State Department of Agriculture,
Des Moines, Iowa.

Gentlemen: Owing to the fact that my business necessitates changing my residence to Chicago, I hereby submit my resignation as a member of the Iowa State Board of Agriculture, to take effect immediately.

I regret that conditions are such that I have to sever my associations with you men, for I feel that our relations have been most pleasant and enjoyable from my standpoint, and I can assure you that you will always find me boosting the stock of the Iowa State Fair.

Hoping that this year's fair will make all former ones look like pumpkin shows, I am, Yours sincerely,

J. F. SUMMERS.

Mr. Curtiss moved the resignation of Mr. Summers be accepted. Seconded by Mr. Olson. Motion carried.

The president called for nominations to fill the vacancy in the ninth district. Mr. Pike nominated Mr. Chas. Escher, Junior, of Botna, Iowa, to succeed Mr. Summers from the ninth district. Seconded by Mr. Tribby.

Mr. Pike moved if there were no further nominations that nominations be closed and the secretary be instructed to cast the twelve votes of the members present for Mr. Chas. Escher, Jr., as member of the State Board of Agriculture for the term expiring the second Wednesday in December, 1916. Seconded by Mr. Tribby. Motion carried.

President Cameron declared Mr. Escher duly elected member of the State Board of Agriculture for the term expiring the second Wednesday in December, 1916.

Mr. Curtin moved that the board borrow $5,000, bearing six per cent interest, from the Central State Bank and that the two notes, one for $2,000 and one for $3,000 be signed by the president and secretary and endorsed personally by the officers and members of the State Board of Agriculture. Seconded by Mr. Phillips. Motion carried.

Mr. Pike moved that the executive committee be authorized to purchase a sufficient number of sheep to feed down the grass during the coming year. Seconded by Phillips. Motion carried.

The secretary presented the following proposed advertising budget for the 1916 fair:

ADVERTISING BUDGET FOR 1916—FAIR COMPARED WITH COST OF ADVERTISING 1915 FAIR.

	1915	1916
455 country weekly papers	$ 3,266.17	....
400 country weekly papers	....	$ 3,000.00
17 daily papers outside Des Moines	337.82	450.00
Plates for weekly papers	720.00	600.00
Des Moines daily papers	1,383.69	1,350.00
Agricultural and live stock papers	1,312.04	1,250.00
Horse papers, adv. speed program	893.79	605.00
Miscellaneous papers and magazines	89.00	100.00
Salary Supt.—five months	498.08	625.00
Salary stenographer—five months	250.00	325.00
Printing 375 M Greater Iowa	2,703.74	2,700.00
Postage on Greater Iowa	416.62	425.00
Mailing Greater Iowa	203.07	200.00
300 M envelopes for Greater Iowa	470.22	....
10,800 hangers and mailing tubes	866.35	....

5,000 hangers and mailing tubes	....	700.00
300 window cards	79.00	72.00
500 large daily programs	49.50	49.50
Billboard service	462.47	450.00
Dates and billboard paper	188.71	100.00
Illuminated billboards	467.50	....
Cuts and electros	233.22	150.00
Photographs	87.20	70.00
Catalog and directory advertising	25.00	....
50 M gummed date stickers	55.00	50.00
Printing dates on envelopes	210.44	....
2,000 monthly calendars	59.50	....
5,500 post cards	27.50	25.00
Distributing adv. matter	55.10	75.00
Street car adv.	12.00	....
Canvas signs	8.50	....
Misc. items	....	128.50
Total cost 1915	$ 15,432.13	....
Estimate 1916		$ 13,500.00
Reduction from 1915		$ 1,932.13

Mr. Curtin moved the advertising budget as presented by the secretary be approved by the board. Seconded by Mr. Phillips. Motion carried.

Mr. Frank Joseph, deputy state superintendent, appeared before the board and presented a proposition for putting on a state spelling contest at the 1916 state fair. Mr. Curtin moved the board appropriate $100 for prizes for the contest and that the details be left in the hands of Mr. Joseph and the secretary. Seconded by Mr. Olson. Motion carried.

A committee composed of Messrs. Wilson, Trillow, Allbright, representing the Floral Association, and Mr. Green, superintendent of the Floricultural Department, appeared before the board relative to a better building or better headquarters for the floral display at the Iowa State Fair. Mr. Curtiss moved that the matter be left to the executive committee and in case no better building or location could be provided that the present building be made as suitable as possible. Seconded by Mr. Reeves. Motion carried.

Mr. Curtin moved that the concession department be handled through the secretary's office and that Secretary Corey act as superintendent of the concession department and that he be authorized to employ an assistant superintendent of the concession department for a period of three weeks prior to and during the fair. Seconded by Mr. Olson. Motion carried.

Mr. Curtis moved that the executive committee be authorized to put on a dog show at the 1916 fair provided satisfactory terms could be made for staging the show and a satisfactory location could be secured. Seconded by Mr. Curtin. Motion prevailed.

Mr. Curtiss moved that the board adjourn until eight o'clock p. m. Seconded by Mr. Tow. Motion carried.

EVENING SESSION.

The board convened at the rooms of the Department of Agriculture, with President Cameron in the chair.

The following members answered to roll call: Cameron, Olson, Corey, Tribby, Phillips, Reeves, Curtin, Tow, Legoe, Curtiss, Sheldon, Escher, Mullen and Pike.

The matter of revising the premium list was again taken up by the board. Mr. Curtiss presented the revision of the premium list in the horse department and the same was approved by the board.

Mr. Pike, Superintendent of the Cattle Department informed the board there would be no changes in the cattle department; that is the amount of money offered would be the same as last year except there would be $200 additional special money offered by the Red Polled Cattle Club.

Mr. Tow, Superintendent of the Swine Department, informed the board there would be no changes in the classification for the swine department this year with the exception of adding $100 to the Duroc Jersey Futurity. The Duroc Jersey Association guaranteeing the futurity to be worth $400.

The superintendent of the sheep department had no recommendations to present to the board.

Mr. Tribby, Superintendent of the Poultry Department, recommended that a classification for Red and Speckled Sussex be added to the English Class, the first premium to be $1 and the second 50 cents.

The recommendations of the agricultural exhibitors at the 1915 fair were presented to the board and the changes were approved. Total increase approved by board, $109.

The maximum amount of money to be offered for county exhibits and for individual farm exhibits was discussed by the board members. Mr. Phillips moved that the board offer as premiums in the class for county exhibits $150 for each exhibit that qualifies but in no event shall the amount to be divided pro rata among the exhibitors exceed $2,000; also to appropriate $125 for each individual farm exhibit in divisions 1 and 2 and $100 for each exhibit in district 3 that qualifies, but in no event shall the amount to be divided pro rata among the exhibitors exceed $2,500. Seconded by Mr. Sheldon. Motion carried.

Mr. Reeves, Superintendent of the Horticultural Department, presented a revision of the premium list in that department, and the same was approved.

Mr. Legoe, Superintendent of the Exposition Building, presented a complete revision of the hand-painted china department and informed the board that the classification for his department as revised would call for the same amount of money as offered last year.

The following is a summary of the revision of the premium list showing amount appropriated and approved by the State Board of Agriculture for the 1916 fair.

Horse Department	$ 14,560.00
Draft Horse Futurities	1,000.00
Cattle Department	13,650.00
Swine Department	4,280.00
Sheep Department	3,994.00
Poultry Department	2,181.00
Agricultural Department	7,095.00
Pantry and Kitchen	738.50
Honey and Bees	497.00
Dairy Department	697.00
Horticultural Department	2,109.00

Floricultural Department	1,608.00
Textile, China, etc.	1,322.00
Graphic and Plastic Arts	637.00
Educational	1,404.00
Baby Health Department (medals)	300.00
Boys' Judging Contest	600.00
Speed Events	14,250.00
	$ 70.922.50

The President named as committee on per diem and mileage Messrs. Pike, Tow and Tribby.

Mr. Pike, chairman of the committee on per diem and mileage, presented the following report and moved its adoption:

Mr. President: Your committee on per diem and mileage beg to report as follows:

Name	Days	Rate	Amount	Miles	Amount	Total
C. E. Cameron	4	$4.00	$16.00	140	$14.00	$30.00
O. A. Olson	4	4.00	16.00	155	15.50	31.50
C. H. Tribby	4	4.00	16.00	144	14.40	30.40
C. W. Phillips	4	4.00	16.00	210	21.00	37.00
Elmer Reeves	4	4.00	16.00	126	12.60	28.60
E. J. Curtin	4	4.00	16.00	195	19.50	35.50
Cyrus A. Tow	4	4.00	16.00	112	11.20	27.20
T. C. Legoe	4	4.00	16.00	85	8.50	24.50
Chas. F. Curtiss	4	4.00	16.00	37	3.70	19.70
F. E. Sheldon	4	4.00	16.00	123	12.30	28.30
Jno. P. Mullen	4	4.00	16.00	117	11.70	27.70
H. L. Pike	4	4.00	16.00	206	20.60	36.60

Respectfully submitted, H. L. Pike, C. A. Tow, C. H. Tribby.

On motion of Mr. Reeves the board adjourned.

SPECIAL COMMITTEE MEETING.

AUDITORIUM HOTEL, CHICAGO, February 7-11.

The committee met at the Auditorium Hotel, Chicago and participated in the following meetings:

International Motor Contest Association, Feb. 7.

Congress American Trotting Association, Feb. 8.

State Fair Attraction Meeting, Feb. 9-11.

The committee made contract for Liberati's Band and Concert Company of forty-six pieces, including sixteen grand opera singers for eight days at $2,800.

Also contracted for C. A. Wortham Shows to consist of not less than eight midway shows and three riding devices. The fair to receive twenty-five per cent of the gross receipts on all shows and rides.

The committee received propositions and prices on several acts, aviators, etc., but made no other contracts.

EXECUTIVE COMMITTEE MEETING,

March 6-7, 1916.

Members present Cameron, Olson and Corey.

The committee approved the contract for Liberati's Band and also contract for C. A. Wortham Shows.

The committee instructed the secretary to sign contract for the Mule Derby with A. P. Dickson, Fox Lake, Wisconsin, the consideration to be $333 for the week.

The committee gave further consideration to the propositions for night show in front of the amphitheater. Contract was entered into with the Thearle-Duffield Fireworks Company of Chicago, to furnish their spectacular production known as "The Last Days of Pompeii," fireworks and six free acts for six nights for the sum of $7,000.

The committee also contracted with F. M. Barnes to furnish six acts for program in front of the amphitheater in the afternoon for the sum of $4,300.

The secretary was instructed to make contract for Henry's Band; the band to consist of thirty-five people, including one lady soloist, for seven days for the sum of $1,420.

The committee instructed the superintendent of grounds to dispose of the three blacksmith outfits used in the horse shoeing contest at $25 each.

It was also agreed that the rule providing there should be no charge for vehicles on Wednesday, Thursday, Sunday after five p. m. each day of the fair should also apply to campers who expect to remain on the grounds.

The proposition presented by Rex Beresford, Secretary of the Iowa Beef Producers' Association to provide a class for steer or heifer, any breed, grade or cross-bred, shown by members of the Iowa Boys' Baby Beef Club at the 1916 fair, was brought to the attention of the committee. It was agreed that if the above association would raise $400, for this class, the management of the fair would add $100, making a class of $500.

The committee conferred with Fred Hethershaw relative to reproducing the Iowa Agricultural exhibit at the Panama-Pacific Exposition in the agricultural building for the 1916 fair.

The proposition from the State Sunday School Association to conduct a model Sunday School on Sunday, August 27 was accepted; the committee also agreed to furnish said association sufficient ground on which to erect a tent for assembly and exhibit purposes, without charge.

The secretary was authorized to purchase the necessary addressograph supplies to take care of the permanent mailing list for Greater Iowa.

EXECUTIVE COMMITTEE MEETING.

March 15-16, 1915.

Committee met with members Cameron, Olson and Corey present.

The purpose of the meeting was to make arrangements for building P. P. I. E. Agricultural exhibit in the agricultural building for the 1916 fair. Contract was entered into with Fred Hethershaw of Des Moines to furnish all material, build the booth and install exhibits for $2,700. All corn and material used in exhibit to be the property of the department at the close of the fair and to be paid for when finished and accepted by the state board of agriculture.

Contract was signed with F. M. Barnes for the attraction known as Major Fred Bennett for $200.

Committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

April 4-5-6.

Committee met on April 4 with members Cameron, Olson and Corey present; also director Mullen.

The purpose of this special committee meeting was to consider a proposition from Mr. Allen, representing Sears-Roebuck and Company, Chicago, for space to exhibit agricultural implements.

Agreement was reached whereby they were assigned spaces 23-24-25-27 and 28 inclusive in the west end of Power Hall, containing 4,950 feet of floor space at five cents a square foot. Mr. Allen agreed to submit a list of the implements and articles that would make up their exhibit, and if the same is as per list agreed upon by the committee, Mr. Allen, the secretary is authorized to execute contract for this space.

EXECUTIVE COMMITTEE MEETING.

April 5.

Members present, Cameron, Olson and Corey; also director Curtin.

The purpose of the meeting was to consider a proposition from J. Alex Sloan to furnish cars and drivers for two days' auto racing at the Iowa State Fair, to wit: Saturday, August 26 and Friday, September 1. An agreement was reached whereby Mr. Sloan was to furnish ten specially-built racing cars with eight professional drivers to participate in races on those dates for the sum of $3,000.

EXECUTIVE COMMITTEE MEETING.

April 6.

Members present Cameron, Olson, Corey. Order was signed on the Auditor of State for the sum of $4,207 for the purpose of paying balance due on the sewer.

The committee decided on the following special days:

Wednesday and Thursday, August 23-24 as Preparation Days.

Friday, August 25, Des Moines Day and Auto Racing Day.

Sunday, August 27, Music Day.

Monday, August 28, Manufacturer's and Implement Dealers' Day.

Tuesday, August 29, Old Soldiers' Day.

Wednesday, August 30, Iowa Day and Boys' and Girls' Club Day.

Thursday, August 31, Prize Live Stock Parade Day.

Friday, September 1, Auto Racing Day.

The committee approved an addition of $25 to the Graphic and Plastic Art Department for premiums on posters; also added $29 to the sheep classes and $100 for premium on fleeces.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

April 18-19-20.

Members present Cameron, Olson, Corey.

The following settlement was made with the Moore-Seig Construction Company in accordance with the final estimate made by John A. Burris, Engineer.

Mr. A. R. Corey,
Secretary State Board of Agriculture.

Dear Sir: The Moore Seig Construction Company have completed their sewer contract substantially in accordance with the plans and specifications, and I am sending you, herewith, a statement of the total amount of their contract.

12 inch	2682 ft.,	@ $1.46	$ 3,039.72
10 inch	2159 ft.,	@ $0.65	1,403.35
8 inch	3618 ft.,	@ $0.58	2,098.44
6 inch	5066 ft.,	@ $0.46	2,330.36
	12925 ft.		$ 8,871.87
Extras as previously itemized			120.40
Total			$ 8,992.27

Payments:

June 8, 1915—No. 12426	$ 3,000.00
July 8, 1915—No. 12501	1,000.00
August 21, 1915—No. 12571	1,000.00
September 28, 1915—No. 12822	120.40
	$ 5,120.40
Amount due	$ 3,871.87
Amount of this warrant	3,500.00
Balance due	$ 371.87

Sincerely,
JNO. A. BURRIS.

Arrangements were made in accordance with the resolution of the board for Mr. Cameron and Mr. Corey to go to Omaha on Monday, April 24, for the purpose of purchasing three or four hundred sheep for grazing down the grass on the fair grounds.

The committee approved leasing sixty acres of ground from Joe Moyer at $2.50 per acre for tractor demonstrations.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

April 25-26-27-28.

Members present, Cameron and Corey. In accordance with arrangements made at the Executive Committee Meeting on April 20 the above mentioned members visited the sheep market at Omaha on Monday the 24th and found nothing on the market except lambs that had been on grain feed. They then went to Winterset on Wednesday the 26 and after viewing several flocks purchased the following: From Albert Armstrong, Earlham, 73 clipped ewes with 72 lambs at side for the sum of $675. Frank Rogers, Macksburg, 85 unclipped ewes at $8 per head; this to include 23 lambs at side; $7 discount to be allowed from the total bill. Henry Gifford, Winterset, 110 clipped ewes with 73 lambs at side for $1,000.

The committee also closed contract for the Second Infantry Band of Mason City, Iowa; band to consist of twenty-five pieces and the services to extend from August 25 to 31 inclusive, except Sunday, compensation to be $1,032.

The committee approved the payment of bills.

EXECUTIVE COMMITTEE MEETING.

May 18-19.

Members present, Cameron, Olson and Corey.

On May 18 the Committee went to Winterset for the purpose of purchasing sheep for the fair grounds. One hundred and three head of unclipped ewes with seventy-five lambs at side were purchased for $1,000.

The committee was informed that the Second Infantry Band of Mason City returned contract unsigned. The committee instructed the secretary to make contract for Fischer's Burlington Band which consists of twenty-five pieces, for a six day engagement for the sum of $1,100.

The committee submitted a bid of $300 to Arthur C. Thomas, Secretary of the Western Horse Breeders' Association for Futurity No. 3 to be raced at the Iowa State Fair this year.

The Hawkeye Wireless Association were given free space on the state fair grounds on which to erect a wireless station; also agreed to provide two tickets for each day of the fair for operators of the station.

The committee also deemed it advisable to provide a check stand at the entrance of the auto parking for the purpose of checking blankets, wraps and lunch baskets.

On Friday the 19th the committee and Superintendent of Grounds inspected buildings at the fair grounds for the purpose of determining what repairs and painting should be done prior to the fair. The superintendent was instructed as follows: Repair down spouts and clean and paint valleys in the center section of the brick horse barn; clean all metal panels in sheep pens with steel brush and repaint with light gray iron paint. Clean and repaint valleys and ventilators on cattle barn No. 2. Remove old paint from eave trough on Stock Pavilion with steel brush and repaint. Repaint bandstand on plaza in front of Administration Building.

The secretary was instructed to contract with Potts Brothers for the completion of the storm sewer from the south fence to Dean Avenue and to use balance of sewer fund to extend storm sewer along the west side of the race track at $3.25 a foot. Also make fill over storm sewer at throw gate.

Carl Dare, Des Moines, Iowa, was allotted space in the center of the Poultry Building, approximately 8x18 feet in which to erect a cage to be used for exhibiting fancy birds with the understanding that there be no charge for the space. It was also agreed that he might have the privilege of exhibiting in his own coops a number of breeds of poultry for which the classification offers no premium, with the understanding that there be no charge for entering and showing the birds, provided coops are furnished.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

June 7-8.

The committee met with members Cameron, Olson and Corey present.

The purpose of the meeting was to confer with Mr. McClymond of Malvern, Iowa, relative to taking charge of the concession department. The committee and Mr. McClymond were unable to reach an agreement.

The secretary presented a plan for selling the souvenir key to residents of Des Moines, which key will admit them on "Des Moines Day" for fifty cents each. The plan as outlined was approved.

Arrangements were made to met Mr. Cutts of the M. & St. L. Railway on Thursday, June 15, and Mr. F. M. Barnes on Friday the 16th.

The committee also conferred with Dean Curtiss relative to his being absent during the state fair.

Final settlement was made with the Moore-Seig Construction Company in accordance with contract for the construction of the sanitary sewer system on the fair grounds.

The committee accompanied A. M. McColl of the Board of Control and Warden Sanders of Ft. Madison to the fair grounds and assigned a location between the sheep barn and forage barn for a tent in which to exhibit live stock from the State Institutions under the Board of Control. Also a location at the head of Grand Avenue, Southeast Dining Halls for the purpose of exhibiting manufactured products and needle work.

The committee from the church owning the building east of Dodd and Struthers Building informed the Executive Committee that they wished to dispose of said building and contents and asked the Executive Committee to bid on it. The committee examined the building and contents and made an offer of $100.

The secretary was authorized to order fifty stands of three-color sixteen-sheet billboard paper for the purpose of advertising auto races.

The matter of puting on a cow testing exhibit was also brought to the attention of the committee and it was referred to Mr. Barney and the State Dairy Association. The committee was of the opinion that the expense of this demonstration should be taken care of by the State Dairy Association rather than by the management of the state fair.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

June 15-16.

Committee met with members Cameron, Olson and Corey present.

The purpose of the meeting was to negotiate with F. M. Barnes, Inc., for Ruth Law, aviatrix. Contract was entered into calling for the appearance of Ruth Law and three flights daily at the state fair, the compensation to be $2500 for seven days. Payment to be made pro rata for flights made. In addition to this the committee agreed to stand one-half the expense of a special train to transport Ruth Law, aeroplane and mechanics from Rock Rapids to Ft. Dodge Thursday night, August 24 so that she may make her first flights on Friday, August 25.

The committee also had a conference with Mrs. Allen O. Ruste, Charles City, chairman of the Mothers' Congress. An agreement was reached whereby she is to take charge of the Child Welfare Exhibit at the Women and Children's Building.

EXECUTIVE COMMITTEE MEETING.

June 24-25-26 and 27.

Members present, Cameron, Olson and Corey.

The purpose of the meeting was to confer with Mr. M. G. Linn, general manager of the Des Moines Electric Company, relative to that company taking over the transmission line from light plant to fair grounds, relieving the department of making further payments on line and certain changes in equipment at transforming station.

The following letter from Mr. Linn sets forth the agreement entered into:

Des Monies, Iowa, June 27, 1916.

Mr. A. R. Corey, Secy.,
Department of Agriculture,
State House.

Dear Sir: This is to confirm my conversation with you, as Secretary of the Agricultural Department, last Saturday.

You can use this letter as a receipt in full for the balance due on the transmission line going to your Fair Grounds, with the understanding that this line and the transformers, switches, choke coils, and such other equipment as we have to change, becomes our property. We will change the apparatus in the sub-station without cost to you, and connect you on to the Prairie City line giving you the same class of service, voltage, etc., at the Fair Grounds as you have had in the past.

The substance of this agreement, is that we are to own the line in the future, do what we want to with it, and the contract which was entered into on the 12th of July, 1911, will be in force and effect, the same as though you had completed the remainder of the payments on your line as per the terms of the contract,

I am anxious to change this line promptly, and I will be pleased to have you confirm this agreement at your early convenience.

Yours truly,
M. G. LINN,
General Manager.

The matter of putting on a Ford Championship Race was discussed by the committee. It was agreed that $500 in cash prizes be offered in this race; $250 for preliminaries on Saturday, August 26 and $250 for the final heat on Friday, September 1. In addition to cash prizes C. L. Herring of the Herring Motor Company agreed to offer a silver loving cup for the final heat.

The secretary was instructed to purchase two suitable loving cups for the winners of trotting and pacing division of the Iowa State Fair Futurity No. 1 to be raced this year.

The committee also conferred with B. M. Breed, Creston, relative to acting as assistant superintendent of the concession department. An agreement was reached whereby he is to take charge of the department from August 7 until the close of the fair. The committee agreed to allow him thirty days' time for the two trips he has already made to Des Moines and for his services from August 7 to September 2 inclusive.

The secretary was also instructed to employ Mr. Winfield Gooding to act as night watch and to assist in showing locations in the concession department, commencing July 10 or 15. His salary to be $2.50 a day.

The secretary was also authorized to purchase a gold medal for the winner of the state spelling contest.

The secretary was authorized to enter into contract with Mr. Wingate for decorating all buildings as per proposition submitted. The consideration of contract to be $700.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

July 19-20-21, 1916.

Members present, Cameron, Olson and Corey.

The secretary was authorized to purchase four flood lights for lighting the large sign on back of the amphitheater advertising the night show; also two for lighting sign over entrance to Stock Pavilion advertising the night live stock show. Reflectors and lamps to cost $20 each. The secretary was also authorized to purchase four khaki uniforms with caps for stage hands; also four white uniforms for ring men in night live stock show.

The secretary was also directed to have the four assistant treasurers bonded at $5,000 each; also change makers and ticket sellers in the treasurer's department at $1,000 each.

The matter of employing an assistant secretary was discussed by the committee, Mr. C. C. Heer having handed in his resignation to take effect September 1, 1916. The committee appointed Mr. L. D. Ramsay at a salary of $100 a month commencing August 1. His salary to remain at that figure until February 1, 1917, when he is to receive $110 until August 1, 1917, when he is to receive $125 a month.

The secretary was authorized to purchase approximately 10,000 gallons of road oil at $0.0395 per gallon and to contract with the Hawkeye Road Oiling Company to place same on fair ground streets at .01 cent a gallon.

The secretary was directed to make a contract with Mr. Tom Dennison of Omaha, for the appearance of "Babe King," the fastest pacing pony in the world, for the period of the fair for the sum of fifty dollars ($50). Also to make contract with Mr. E. C. Wharton for Reckless Vernon and five baby racing cars for the period of the fair for the sum of six hundred dollars ($600).

The committee approved the purchase of two racing bikes by Mr. E. J. Curtin, superintendent of the speed department, to be used by the Iowa and Minnesota state fairs in case of break down during the races.

The secretary was authorized to take up the matter of excursion rates within a radius of sixty miles of the city with all railroads leading into the city.

The secretary was instructed to write the manager of the Otis herd of Milking Shorthorns that as no premiums are offered for that breed free stalls would be provided and no entrance fee charged.

The committee agreed that the rule providing no admission fee should be charged for vehicles on Wednesday, Thursday and Sunday should also apply to campers who expected to remain on the grounds.

The secretary was authorized to purchase a five-gallon coffee urn for the private dining hall at an expense of $24. He was also authorized to purchase one car of tan bark for the judging ring in the stock pavilion at $2.50 a ton, f. o. b. cars Milwaukee.

The superintendent of grounds was instructed to thoroughly spray and whitewash the interior of the plants and flower building; also repair fence along southeast corner of the grounds.

Mr. Cameron moved that none of the property at the state fair grounds be lent or moved from the grounds without the written consent of the secretary. Seconded by Mr. Olson. Motion carried.

The committee approved payment of bills.

AUDITING COMMITTEE MEETING.

July 19-21.

Committee consisting of Phillips, Legoe and Mullen met and approved all paid and unpaid bills on file in the department.

SPECIAL COMMITTEE MEETING.

August 12-13-14.

Mr. Pike, superintendent of the cattle department, was present and assigned stalls in the cattle department. Mr. Rhinehart, Mr. McCoy and Mr. Berry, assistants in the horse department, were present to work on assignment of stalls, formulate judging program and program for night show in the Stock Pavilion.

August 17-18.

Mr. C. A. Tow, superintendent, assigned pens in the swine department.

EXECUTIVE COMMITTEE MEETING.

July 31, August 1-2.

Members present, Cameron and Corey.

The purpose of the meeting was to negotiate the sale of sheep with Mr. Scott of Winterset, Iowa.

The secretary was instructed to notify T. J. Hudson, Charles Akes and Carl Shields that they had been selected to serve as marshals in the horse and cattle departments during the 1916 state fair. The compensation to be $45 for the period of the fair.

Mr. Cameron, director in charge of the Public Safety Department, arranged with Gen. J. Rush Lincoln to serve as superintendent of the Public Safety Department and furnish 120 Ames cadets at $2.50 a day, to act as guards. The officers to receive $3 a day and General Lincoln $100 for his services. In addition to this the department to pay $2 for the horses used by mounted men and freight on horses to Des Moines and return to Ames. The department also to furnish cots, mattresses, pillows and blankets.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

August 16-September 2.

The committee had a demonstration of trucks and purchased the 1500 pound International truck for $1.095.25 as per resolution of the board.

The committee also sold 241 lambs for the sum of $1,205 to William Donavan, Des Moines, Iowa.

The committee held no regular meetings during the time of the fair but transacted such business as was brought to their attention.

The committee also approved payment of bills.

MEETING OF STATE BOARD OF AGRICULTURE.

September 1, 1916.

The board convened at eight o'clock p. m. in the board room of the Administration Building. The following members were present: Cameron, Olson, Corey, Morrow, Tribby, Phillips, Reeves, Curtin, Legoe, Sheldon, Mullen and Pike.

Payrolls were presented as follows:

Payrolls were presented as follows:

	1915	1916	Decrease	Increase
Police Department ....$	4,471.74	$ 3,714.63	$ 760.11	
Auto Park and Marshals....	259.00	244.00	15.00	
Campers' Headquarters	180.00	244.50		$ 64.50
Treasurer's Department	1,206.65	1,368.00		161.35
Admissions Department	2,714.50	2,696.50	18.00	
Secretary's Department extra help	881.75	694.25	187.50	
Secretary and regular employees for August	781.66	1,073.33		291.67
Forage Department	559.00	717.50		[illegible]
Property Men	135.70	183.15		47.45
Boys' Camp Leaders	172.00	158.50	13.50	
Judging Contest	58.50	57.40	1.10	
Press Bureau	206.00	100.00	106.00	
Horse Department	1,453.18	1,575.06		121.88
Cattle Department	895.15	1,184.15		289.00
Swine Department	391.00	473.00		82.00
Sheep Department	267.00	288.00		21.00
Poultry Department	234.53	297.51		62.98
Speed Department	799.46	603.00	196.46	
Agricultural Department ...	538.00	533.85	4.15	
Horticultural Department ..	144.76	148.20		3.44
Ticket Auditing Department	283.50	246.00	37.50	
Plants and Flowers	129.00	110.00	10.00	
Machinery Department	646.35	597.60	48.75	
Exposition Department	406.10	322.70	83.40	
Concessions Department	1,218.50	1,721.00		502.50
Art Department	141.13	108.00	33.13	
School Exhibits Department..	461.25	571.00		109.75
Women & Children's Dept....	791.00	725.88	65.12	
Gatemen, Admin. bldg........	32.00			
Dairy Department	900.96	1,083.95		182.99
Board Per Diem and Mileage.	1,417.00	1,259.30	157.70	

Mr. Morrow moved that the payrolls as read be allowed and the secretary be authorized to issue expense warrants covering same and that same be deposited with the Central State Bank to the credit of the superintendent's payroll account. Seconded by Mr. Sheldon. Motion carried.

Mr. Reeves moved that the bill for meals for guests and the luncheon on State Day be allowed and paid to the Club Dining Hall. Motion seconded and carried.

President Cameron appointed as Committee on per diem and mileage Messrs. Legoe and Pike.

Mr. Olson moved that the treasurer and secretary each be allowed $25 for expenses during the fair. Motion seconded and carried.

The committee on per diem and mileage reported as follows, and upon motion of Mr. Legoe same was adopted and the secretary authorized to draw warrants for the respective amounts:

September 1, 1916.

Mr. President: Your committee on per diem and mileage beg to report as follows:

Name	Days	Rate	Amount	Miles	Amount	Total
C. E. Cameron	27	$4.00	$108.00	140	$14.00	$122.00
O. A. Olson	25	4.00	100.00	155	15.50	115.50
C. H. Tribby	23	4.00	88.00	144	14.40	102.40
C. W. Phillips	22	4.00	88.00	210	21.00	109.00
Elmer Reeves	22	4.00	88.00	126	12.60	100.60
E. J. Curtin	22	4.00	88.00	195	19.50	107.50
Cyrus A. Tow	22	4.00	88.00	112	11.20	99.20
T. C. Legoe	22	4.00	88.00	85	8.50	96.50
F. E. Sheldon	22	4.00	88.00	123	12.30	100.30
Chas. Escher, Jr......	22	4.00	88.00	100	10.00	98.00
J. P. Mullen	22	4.00	88.00	117	11.70	99.70
H. L. Pike	22	4.00	88.00	206	20.60	108.60

Respectfully submitted, T. C. Legoe, H. L. Pike.

On motion of Mr. Olson the board adjourned.

EXECUTIVE COMMITTEE MEETING.

September 27-28-29.

Members present, Cameron, Olson and Corey.

The purpose of the meeting was to negotiate with Mr. Weaver and the street car company for the purchase of Mr. Weaver's lot at the southwest corner of the fair grounds.

In accordance with the rules of the I. M. C. A. the committee agreed to pay the expenses of J. A. Thompson, winner of the Iowa Ford Championship race, to Detroit, Michigan, and return, for the purpose of competing in the International Championship race to be contested in Detroit October 15.

The superintendent of grounds was instructed to fence off a plot of ground south of the Women and Children's Building and arrange for separating and feeding the sheep.

The committee also took under consideration the proposition of heating the carriage section of the horse barn to be used by various breeding associations for cattle and horse sales.

The superintendent of grounds was instructed to purchase a feed grinder for grinding feed for sheep; also to remove corn from the Horn of Plenty and use it for feeding mule team and sheep.

The committee approved payment of bills.

EXECUTIVE COMMITTEE MEETING.

October 25-27.

Members present, Cameron, Olson and Corey.

The purpose of the meeting was to make arrangements for paying bills on file and running expenses up to December 1, 1916. The Central State Bank, Des Moines, agreed to loan the board $20,000 on a note endorsed by the members of the board personally, with interest at six per cent.

The secretary was instructed to draw up the note and send it to each member of the board for their endorsement.

The claim of F. F. Faville, Storm Lake, amounting to $115.20 for legal services in 1912 was allowed and ordered paid.

Mr. N. B. Ashby and Mr. George Hamilton appeared before the committee asking permission to use the poultry cooping at the fair grounds for the Iowa Poultry and Pet Stock Association Show. The committee agreed to allow them to use the cooping at a rental of $100.

The program for the State Agricultural Convention was discussed and it was decided to co-operate with the County and District Fair Managers' Association in putting on a joint program. The secretary was also instructed to extend to Mr. J. C. Simpson, secretary of the Minnesota State Fair, an invitation to address the convention. Also to extend an invitation to Dean C. F. Curtiss to address the convention relative to his trip to the Argentine.

The committee conferred with Mr. O. A. Weaver relative to purchasing lot 1, block "A" Cottonmill Addition to Grant Park, located at the southwest corner of the fair grounds; also with Emil G. Schmidt, president, Des Moines City Railway, relative to lot on which to move Weaver's drug store at the northwest corner of East Thirtieth and Walnut streets. The committee made Mr. Weaver a proposition to pay him $1,200 for his lot, clear of all encumbrance and special assessments, he to remove drug store and all other small buildings.

The committee instructed the secretary to communicate with the members of the board and if this proposition was satisfactory, and provided Mr. Weaver accepted same, to execute and sign contract for the purchase of said real estate. The secretary communicated with the members of the board and the following members voted for the purchase of the lot for the sum of $1,200: Morrow, Tribby, Curtin, Legoe, Curtiss, Sheldon, Mullen, Pike, Cameron, Olson, Reeves and Corey. Members not heard from: Phillips, Escher and Tow.

October 3 the secretary entered into contract for the purchase of said lot with Mr. O. A. Weaver for the sum of $1,200; $100 paid at the time of execution of contract; $200 on or before October 16; $400 as soon as the store and buildings are removed from the lot and the balance, $500, when warranty deed and abstract are delivered to the secretary of the State Board of Agriculture.

AUDITING COMMITTEE MEETING.

October 26-27.

Members present, Legoe and Mullen.

The committee audited all paid bills on file.

MEETING OF STATE BOARD OF AGRICULTURE.

Thursday, December 14, 1916.

The board convened at ten a. m. with President Cameron presiding. The following members responded to roll call: Cameron, Olson, Corey, Morrow, Tribby, Reeves, Curtin, Legoe, Curtiss, Sheldon, Escher, Mullen and Pike.

The secretary read the minutes of the board and executive and special committee meetings, commencing with the board meeting on February 9 and concluding with the auditing committee meeting on October 26-27. Mr. Olson move the minutes as read be approved. Seconded by Mr. Sheldon. Motion carried.

Mr. Olson moved the board adjourn sine die. Motion carried.

Mr. B. W. Garrett, clerk of the Supreme Court, was called and administered the oath of office to the following newly elected officers and members of the State Board of Agriculture: Cameron, Olson, Davis, Curtin, Legoe, Sheldon, Mullen and Escher.

The secretary called the roll and the following members responded: Cameron, Olson, Corey, Morrow, Tribby, Davis, Reeves, Curtin, Legoe, Curtiss, Sheldon, Escher, Mullen and Pike.

The board proceeded to elect a secretary and treasurer. Mr. Pike moved Mr. Corey be elected secretary to succeed himself at a salary of $3,400 per year until April 23, 1917, and then $3.500 per year until the next annual meeting of the State Board of Agriculture. Motion seconded by Tribby. Carried.

Mr. Mullen moved the Department of Agriculture pay the $25 premium on the $10,000 surety bond required of the secretary. Motion seconded by Mr. Olson. Carried.

Mr. Legoe moved Mr. W. W. Morrow be elected to succeed himself as treasurer of the Iowa Department of Agriculture for the ensuing year at a salary of $100 per annum contingent upon giving bond of $100,000 with surety approved by the State Board of Agriculture. Motion seconded and carried.

The matter of permitting Sears-Roebuck and Company and other catalog houses to exhibit at the Iowa State Fair was discussed by the board. Dean Curtiss suggested that no action be taken at this time but that a conference be arranged between the officers of the Iowa Retail Merchants' Association and the State Board of Agriculture at the next meeting of the board.

The secretary made the following report to the board:

SECRETARY'S REPORT.

The attention of the board has been called to the printed statement showing receipts and disbursements of the department for the year ending November 30, 1916, and comparative statements with the 1915 fair.

The comparative statement of the expense of fair other than premiums on page 14 shows an increase of $576.07. The payroll of the secretary's office for the year and the payrolls of all the departments show a decrease of $847.37. The comparative statement of premiums paid shows a decrease of $2,538.34. The net decrease in cost of fair this year was $1,962.27.

The board is to be congratulated for being able to reduce the cost of the fair to this extent and at the same time give the public the best fair they have ever had.

The expense of reproducing the "Horn of Plenty" amounted to $2,734.31. There will be a credit to be deducted from this amount of about $200 for corn sold and fed to sheep.

The department finances are in much better shape than a year ago. On December 1, 1915, the interest-bearing indebtedness was $40,000 and cash balance on hand $100.63.

On December 1, 1916, the interest-bearing indebtedness was $20,000 and the cash balance on hand $3,998.17. Out of this balance we will be obliged to pay $900 balance due on the Weaver lot, leaving a balance of $3,098.17, with which to start in the new year. There will also be due from the state January 1, $3,400 for insurance and department support. The fees from the stallion registration division amount to about $10,000 annually, so it should not be necessary to borrow any more money to carry us over until the next fair.

In accordance with a resolution of the board the committee purchased 369 head of ewes and 243 lambs for feeding down grass on the fair grounds. The cost and expense of taking care of sheep and the receipts from sale of sheep and wool follow:

Original cost of sheep	$ 3,431.52	
Sheep herder	377.75	
Care and feeding	76.00	
Shearing	23.13	
Labor fencing buildings and flower beds	99.00	
Services man and auto purchasing sheep	55.00	
Salt and miscellaneous expense	7.10	
Corn for sheep on feed	150.00	
Total expense to December 1st		$ 4,222.50
Wool sold	$ 313.79	
241 lambs at $5 each	1,205.00	
182 ewes, 3 bucks at $8 each	1,480.00	
Received from county acct. loss by dogs	15.75	
Total receipts		$ 3,014.54
Amount charged against sheep on hand		$ 1,207.96
Estimated value of sheep on hand:		
113 ewes on feed	$ 904.00	
26 ewes thrown out of lot sold	130.00	
3 lambs	15.00	
4 bucks	40.00	$ 1,089.00
146 Estimated loss on sheep		$ 118.96

The cost of mowing grass and weeds in 1915 was $700.75 and in 1916 $97.73. The difference of $603.02 is due to the sheep so in the end we are about $500 to the good on the sheep proposition. Our loss was quite heavy —about 44 ewes and 10 or 12 lambs.

The matter of asking the legislature for an annual appropriation for maintaining the grounds and buildings should have the attention of the board at this meeting.

At the present time the department receives annually $1,000 for insurance and repairs and $2,400 for the support of the Department of Agriculture. The premiums on insurance amount to about $1,700 and maintenance and repairs to about $7,000 annually. If the board is to maintain the property as it should be they will be called upon to expend a much larger sum annually for this purpose than they have in the past.

For the board's information I wish to speak of a few matters that will require attention in the near future. The race track should be resurfaced the coming year; practically every frame building on the grounds and all the metal roofs should be painted next year. The roof on the swine pavilion, grandstand, dining halls and porches of Administration Building will have to be replaced within the next two or three years. It will also be necessary to replace the metal roofs on the Agricultural Building and Stock Pavilion within three or four years. With these extraordinary expenses to meet it would seem the board should ask for an annual appropriation of $15,000 or $20,000 for insurance and maintenance of grounds and buildings.

The board should also ask for an appropriation to purchase the 17 acres of land held under an option at $10,000; $1,200 for the Weaver corner; $750 for Flint's lots and $300 for the two other lots to square out the southwest corner of the grounds.

It might be well for the board to incorporate in the recommendations to the Governor a plan of improving the fair grounds covering a period of years and providing the buildings that are needed. That is secure an appropriation of $400,000 or $500,000 for building and have about $75,000 or $100,000 available each year for four or five years. This plan was worked out in New York State when they rebuilt their grounds. They had $2,000,000 appropriated—$500,000 available each year for a period of four years.

The board is familiar with the present accommodations and knows that practically every department has outgrown the present quarters with possibly the exception of the swine and sheep departments.

The cattle barn should be completed along the line of our proposed plan at an early date if we hope to keep the show up to its present standard. The proposed cattle barn will accommodate about 1,400 head of cattle. The horse barn should also be completed in accordance with the proposed plan.

There should also be a building provided for the exhibition of fruit, plants and flowers to relieve the congestion in the Agricultural Building and provide better quarters for these exhibits. Also a dairy building equipped with a model creamery and ice cream plant, a place for cow testing demonstration and sufficient floor space to show dairy equipment and machinery.

Machinery Hall should be completed and the new section set aside for the auto show. The grandstand should also be completed to provide a larger seating capacity and to make better use of the exhibition rooms under the stand. This would contemplate an extension to the main show room in the center about 42 feet wide and extending the full length between the two entrances, giving about the same amount of additional floor space as the auto show annex. This would give us a fire proof room 130x180 feet and a mezzanine floor 80x180 feet. This room could be used for the auto show until the Machinery Hall is completed and then for the exhibits now housed in the Exposition Building and additional mercantile exhibits. The old Exposition Building could be fixed up a little and used for a pure-food show and exhibits of that sort.

This plan of improvements would contemplate the expenditure of about $375,000 or $400,000 in a four or five-year period and is not an extravagant one, but only provides the necessary room to properly house the exhibits.

The attention of the board is also called to the Indiana statute which provides the board may bond the fair ground in a sum not to exceed $80,000 to take care of any indebtedness the board may incur. It is unfair to the members and officers of the board to ask them to extend their personal credit to take care of any indebtedness that may result from a few days' rain during the fair.

AFTERNOON SESSION.

1:30 P. M.

Members present as at the morning session with the exception of Messrs. Curtiss and Sheldon, they having been excused by the president.

Professor E. C. Bishop, of the Iowa State College, superintendent of the Educational Department and the Boys' and Girl's Club work at the Iowa State Fair, appeared before the board and made the following recommendations:

Recommendations for Educational Department Iowa State Fair and Exposition 1917.

1. That provision be made in the premium list for exhibits by township schools under special supervision; the exhibit to represent the schools of the township and showing results of the special supervision. Exhibit to be made by the special township supervisors.

PRIZES:

First	$15.00
Second	12.00
Third	10.00
Fourth	8.00
Fifth	5.00

2. That Boys' and Girls' Club Day be continued as last year, the particular day to be either one of the earlier days of the fair or on the day preceding the Live Stock Parade, and if boys are desired to lead live stock that provision be made for them to remain over for such purpose.

3. That provision be made for demonstration teams in canning, potato, corn, and poultry work to give demonstrations each day of the fair.

4. That the instructional work in canning be combined with the demonstration work in canning.

5. That the demonstration work in manual training be continued.

6. That provision be made on Club Day for a parade by club members, in which the different lines of work be represented and where any county or local club may appear in special uniform or, as may be provided, to make an interesting and instructive showing of work done.

7. That, if possible, additional exhibit space be provided to take care of the increased lines of work.

Mr. Bishop also spoke in the interest of what is known as the professionals in the Boys' Club Work in the State of Iowa, and suggested the State Board of Agriculture include in the classification for Boys and Girls' Club Work a class for professionals. This would require four prizes; one for each of the four boys who have excelled in producing corn, pigs, baby beeves and garden products in county contests.

The president requested Professor Bishop to outline this plan more fully in writing to the secretary and that the matter be referred to the Executive Committee with power to act.

Mr. Kuser representing a committee from the State Board of Control appeared before the board and presented a proposition for asking the legislature for an appropriation for constructing two buildings on the Iowa State Fair Grounds to be used in housing the exhibits from the institutions under the State Board of Control. One building to be set aside for live stock, the other for manufactured and textile exhibits. The board endorsed the plan but asked that the request for this appropriation come from the State Board of Control rather than from the State Board of Agriculture.

Mr. W. B. Barney, Superintendent of the Dairy Department, presented a request from the buttermakers and dairymen for an adequate building on the state fair grounds to be known as the Dairy Building. Mr. Barney declared the building should provide a sufficient amount of floor space in which to exhibit dairy machinery and dairy equipment; also a model creamery; a model ice cream plant; quarters for mechanical cow milking demonstrations and quarters for a cow-testing association exhibit.

Mr. Legoe moved the Executive Committee be authorized to employ a superintendent of grounds at a salary of $1,200 a year and the same privileges enumerated in last year's contract. Mr. Mullen seconded the motion. Motion prevailed.

Mr. Mullen moved the dates of the 1917 Iowa State Fair and Exposition be August 22-31 inclusive. Motion carried.

The matter of messengers for the superintendents of the cattle and horse departments was taken up and the board authorized Messrs. Curtiss and Pike to employ one messenger each for their respective departments for the 1917 fair.

Mr. Pike moved the management of the 1917 fair be delegated to the executive committee and the elective members of the State Board of Agriculture. Seconded by Escher. Motion carried.

Mr. Curtin moved that the Boys' State Fair Camp and the Boys' Judging Contest be made a feature of the 1917 Iowa State Fair and that $600 be offered in five scholarships at the Iowa State College of Agriculture in the Boys' Judging Contest, and that the railroad expense, board and lodging of the boys winning trips to the state fair boys' camp be paid by the Department of Agriculture.

Mr. Escher moved that $1,450 be appropriated for the classification in the Educational and Boys' and Girls' Club work departments, and that the secretary be authorized to publish the premium list at an early date. Motion seconded and carried.

The matter of putting on a spring stallion show was discussed by the board and Mr. Mullen moved that the same be referred to the executive committee and Dean Curtiss with power to act. Seconded by Curtin. Motion carried.

Mr. Curtin moved that $1,000 be appropriated for the National Draft Horse Breeders' Futurity and the same be continued at the 1917 fair. Seconded by Tribby. Motion carried.

The request for a classification for mule-foot hogs was brought to the attention of the board. Mr. Reeves moved the request be referred to Mr. Tow, Superintendent of the Swine Department, and the executive committee with power to act. Seconded by Mr. Curtin. Motion carried.

Mr. Curtin moved an appropriation of $150 for the American Poland China Futurity and $100 for the Duroc Jersey Futurity be made, provided the American Poland China Record Association and the National Duroc Jersey Registry Association contribute to these futurities on the same basis as they did in 1916. Motion seconded by Tribby.

Mr. Pike moved that $250 be appropriated for one of the National Shorthorn Breeders' Futurities provided the American Shorthorn Breeders' Association guarantee this futurity to be worth $1,000. Motion seconded and carried.

The matter of allowing the people on Dean avenue to connect with the state fair sewer system was discussed by the board. Mr. Curtin moved the matter be referred to the executive committee with power to act. Seconded by Reeves.

The matter of allowing Highland Park College to erect a permanent dining hall and headquarters for the college on the state fair grounds was brought to the attention of the board. Mr. Curtin moved the application be denied. Motion seconded by Mr. Davis. Carried.

The claim of $10 filed by Howard Shaul, Williamsburg, Iowa, for the loss of two poultry coops at the Iowa State Fair and the $25 claim filed by the Piety Hill Farm for loss of one pullet were brought to the attention of the board. Mr. Escher moved the bills be not allowed. Seconded by Reeves. Motion carried.

The claim of $25 filed by Alfred Shepherd, deputy labor commissioner, for loss of small engine used in connection with state factory inspectors' exhibit during the fair was presented to the board and Mr. Davis moved the claim be rejected. Motion seconded by Escher. Carried.

The bond of Mr. W. W. Morrow, Treasurer, was read by the secretary. Mr. Mullen moved the bond of $100,000 be approved. Motion seconded by Mr. Olson and carried.

Mr. Curtin moved all unfinished business be delegated to the executive committee with power to act. Seconded by Mr. Reeves. Motion prevailed.

The president appointed Messrs. Pike and Legoe committee on per diem and mileage.

The committee on per diem and mileage made the following report and on motion of Mr. Olson, seconded by Mr. Escher, the report was adopted and the secretary was instructed to draw warrants for the respective amounts:

Mr. President: Your committe on per diem and mileage beg to report as follows:

Name	Days	Rate	Amount	Miles	Amount	Total
C. E. Cameron	6	$4.00	$24.00	140	$14.00	$38.00
O. A. Olson	6	4.00	24.00	155	15.50	39.50
C. H. Tribby	5	4.00	20.00	144	14.40	34.40
C. W. Phillips	3	4.00	12.00	210	21.00	33.00
E. T. Davis	2	4.00	8.00	121		8.00
Elmer Reeves	5	4.00	20.00	126	12.60	32.60
E. J. Curtin	5	4.00	20.00	195	19.50	39.50
T. C. Legoe	5	4.00	20.00	85	8.50	28.50
Chas. F. Curtiss	5	4.00	20.00	37	3.70	23.70
F. E. Sheldon	5	4.00	20.00	123	12.30	32.30
Chas. Escher, Jr.	5	4.00	20.00	100	10.00	30.00
Jno. P. Mullen	5	4.00	20.00	117	11.70	31.70
H. L. Pike	5	4.00	20.00	206	20.60	40.60
						$411.80

Respectfully submitted, H. L. Pike, T. C. Legoe.

On motion the board adjourned to meet at the call of the president.

PART II

Proceedings of the State Agricultural Convention.

WEDNESDAY, DECEMBER 13, 1916.

DELEGATES PRESENT.

Farmers' Institutes	24
Short Course	2
County and District Fairs	46
Counties not holding fairs	7

STATE BOARD OF AGRICULTURE.

Ex officio Members	3
Officials	4
Directors	10

The convention was called to order at ten o'clock in the agricultural rooms at the State House. President C. E. Cameron of the State Board of Agriculture in the chair.

Vice President O. A. Olson presided while President Cameron delivered the following address:

PRESIDENT'S ADDRESS.

C. E. CAMERON, ALTA.

It is with pleasure and satisfaction that I greet you at the sixty-second annual meeting of the Department of Agriculture, for we certainly should feel grateful for this great year in Iowa. The bountiful crops and the prosperity of this state this year will, in my opinion, long be remembered by the agricultural interests of the state. Not only were we prosperous in agricultural lines, with great crops and high prices for all farm products, but in all lines throughout the state.

The 1916 Iowa State Fair was the most successful, not only in a financial way but in attendance; and I believe from an exhibit standpoint it was the greatest agricultural fair ever held in the

United States. Reports from county and district fairs indicate that they too enjoyed this prosperity.

The action of the Thirty-sixth General Assembly in increasing the amount of state aid the fairs should receive according to the amount of premiums paid out was a great help to the county and district fairs. They feel that the state is interested in this great work. There were more county and district fairs held in Iowa this year than ever before in the history of the state. Counties that had abandoned their fairs have taken on new life and have brought them back bigger and better than ever before; counties that never had fairs are now organizing and will hold their first fairs the coming year.

Just here I wish to make a few suggestions to the managers of the county fairs. Be careful with the arrangement of your program. Do not get it top-heavy in any particular department. Have a well-balanced fair and try and have something that will interest all kinds of people, for it takes all kinds of people to make a successful fair. One thing you should not lose sight of, and that is the educational features of the fair. Interest the boys and girls, for upon them depends the future success of the fairs. Try to impress upon the people of the community that it is a duty they owe their fair to help in every way possible to make it a success. Arrange your program so that there will be nothing to interfere in the mornings to take the people away from the educational features of the fair. I mean by this that every exhibitor has a right to expect that the people who come to the fair will have the mornings to go through all departments. This is due the exhibitor, for when he brings his exhibits to the fair he wants the people to study them; and if you have counter attractions going on all day to draw the people away from the exhibits they will feel that their work has been in vain. So arrange your program that there will not be any amusement features in the morning.

I am thoroughly convinced that the night show in connection with the fair is becoming very popular with the patrons, and a success financially. In this age of quick transportation by the automobile, wherever night shows have been tried the management has been well pleased. The arrangement of the night program will depend largely upon your community. In my county we begin with a band concert and several selections by a good lady singer, then two or three vaudeville performances, and wind up with a display of fireworks.

I am also pleased to state that there was not a single instance of state aid being protested on the ground of allowing gambling on the grounds; showing that the fairs can be made successful without the so-called gambling devices that have caused so much criticism in past years.

The question has often been asked why Iowa holds the greatest state fair. In the first place, Iowa should have the greatest agricultural fair. It is the greatest agricultural state in the Union; ranks more times first in the production of farm crops than any other two states; her people are intensely interested in the production of the soil; they are proud of their occupation and are trying each year to produce more and better crops and better animals. It has become a matter of pride with them. The name Iowa means something and they are determined to maintain this reputation as it stands today. If you do not think they are interested in the things Iowa stands for, go any day among the different exhibits of the fair and see the thousands of people watching with intense interest the judging in the different departments. This is so noticeable by visiting other state fairs. Go to our stock pavilion the days the stock is being judged and look up in the faces of Iowa's best class of people sitting there for hours watching the placing of ribbons on the animals as they are lead into the ring. You will see then why Iowa leads the world—and she should. To continue this great interest the state fair must take advanced grounds and keep in the front ranks by providing suitable buildings for housing and showing to the best advantage the exhibits as they are brought to the fair. I would mention a few of the buildings the fair is in need of: first, a large cattle barn, an addition to the machinery building, a dairy building, and a maintenance fund for the upkeep of all the buildings on the grounds.

As the fair grows, keeping the buildings in repair has become quite a burden on the receipts of the fair each year. With increased premiums and general expenses each year it is becoming quite a problem with the management to meet all these incurred expenses, and I hope the legislature this winter will look into these propositions and help the management some way with this increased expense. Some of the permanent buildings have now been built fifteen years and the upkeep is increasing. This is the state's property and the legislature each session provides for the maintenance of all their other state institutions; so I cannot see why they cannot take care of this one. This year we tried the experiment of mowing our lawns with sheep and they certainly did a fine job, especially in keeping the weeds down in the camp grounds. Our camp grounds have never been in such fine condition. It has cost us annually about six hundred dollars to keep the grass and weeds cut. We have sold all the lambs and most of the old sheep. I think we have about one hundred and forty head left that we are feeding and expect to market. If the price keeps up we will about break even on our new lawn mowers and save the six hundred dollars that we have spent heretofore for the work of mowing the grass.

It will not be necessary for me to take up the details of the last fair, as Mr. Corey, the secretary, will go into that and give you the total attendance, receipts and profits of the fair this year. I will say that the fair was never so satisfactory to the management as it was this year. My ambition has been all these years to live to see the day that our attendance would be 300,000. It looked this year as though my wish would be fulfilled; but for one rainy day I am satisfied our attendance would have been over that number. As it was, we had something over 292,000 in attendance; so we only lacked 8,000 of fulfilling the dream I have had all these years. Conditions were ideal this year for the fair. Crops were good, the weather excellent, and with all kinds of farm work well in hand the citizens of the state had both leisure and inclination to attend the fair.

President Cameron appointed the following committees:

Committee on Credentials: H. L. Pike, Monona County; G. H. White, Mills County; Ralph Sherman, Poweshiek County.

Committee on Resolutions: Chas. H. Barber, Cerro Gordo County; J. C. Beckner, Page County; W. M. Clark, Marshall County.

The Secretary of the State Board of Agriculture, Mr. A. R. Corey, made the following report for the year:

REPORT OF SECRETARY.

A. R. COREY.

In preparing a report for this convention I have made it as brief as possible, giving a short review of the more important work carried out in the four divisions of the department, viz., the Stallion Registration Division, State Publicity Department, Department of Agriculture and the State Fair.

STALLION REGISTRATION DIVISION.

Up to December 1, 1916, the Stallion Registration Division issued 6,065 state certificates for pure-bred stallions, 2,150 for grade stallions, 432 for pure-bred jacks and 499 for grade jacks. In addition to this the division also issued 1,663 transfer certificates. It is of interest to know the percentage of pure-bred stallions has gradually increased since the passage of our present stallion law. In 1912, the first year the law was in force, 69 per cent of all the stallions offered for public service were of pure breeding. In 1913 the percentage remained about the same; in 1914 70 per cent were pure breds; 1915, 72 per cent and in 1916 74 per cent. This is a larger percentage of pure bred stallions than will be found in any other state. The reports from other states show that for the year 1915 Illinois had 63 per cent pure breds, Wisconsin 59 per cent, Kansas 56 per cent, Indiana 54 per cent and Minnesota 51 per cent.

This is a showing our draft horse breeders should certainly be proud of. The figures for Iowa would indicate the stallion law is fulfilling the purpose for which it was enacted by gradually reducing the percentage of grade sires and diminishing the number of unsound sires among pure breds.

STATE PUBLICITY DEPARTMENT.

The State Publicity Department which has been conducted by the Department of Agriculture for the past four years, without financial assistance from the state, has proved conclusively that there are wonderful opportunities for a department of this kind. However, to accomplish the work that should be done there should by state aid to cover the salary of the director, stenographer, and the expense of printing and postage. The expense of conducting this department has been about $5,000 a year and has been paid from the fees received in the Stallion Registration Division and the state fair funds. This year the department published and mailed 300,000 copies of GREATER IOWA, the official monthly publication. In addition to this, statistical data and other information has been complied and supplied to booster organizations. The department is also called upon to answer hundreds of inquiries pertaining to Iowa land, agriculture and live stock from parties both in and outside the state.

SPRING STALLION SHOW.

The Second Spring Stallion show held at the fair grounds, February, under the management of the State Board of Agriculture, brought out good rings in the Percheron division, but the Belgian, Shire and Clydesdale rings were rather light. There were fifty Percherons, eleven Belgians, five Shires and six Clydesdales entered. Two weeks previous to the show a spell of rainy weather followed by zero temperature covered the entire state with a coating of ice and a good many exhibitors who would have come otherwise preferred to leave their horses in the stalls rather than take the risk of getting them to the shipping point over the bad footing. The cash prizes amounted to $950. The second annual auction sale under the management of the Iowa Draft Horse Breeders' Association was held in connection with the show and they disposed of 125 head of horses.

COUNTY AND DISTRICT FAIRS, 1916.

During the past season county fairs were held in seventy-seven counties in the State. Fifty-eight counties held one fair each, two held two each and three held three each, making a total of ninety-nine fairs for the season.

As usual a few fairs encountered rainy weather and met with financial loss. Taking all fairs into consideration, however, they were unusually successful this year. Sixty-seven showed a profit of $62,230.80 and thirty-two a loss of $18,895.06.

The total attendance was 1,272,479, which is an increase of 156,874 and an average attendance for each fair of 12,853. The gate receipts increased $73,832.11, or 24 per cent over last year.

The ninety-nine fairs paid out in cash premiums, other than for speed events, $144,703.25. This is an increase of $27,264.15 or 23 per cent over last year.

The state aid amounted to $56,870.67, which is an increase of $8,784.69 over the amount received last year and an average of $574.45 for each fair.

The folowing thirteen fairs paid in excess of $2,000 in premiums which entitled them to $800 the maximum amount of state aid:

1.	Burlington Tri-State Fair, Burlington	$10,923.25
2.	Sioux City Live Stock Fair, Sioux City	8.753,50
3.	Waterloo Dairy Cattle Congress, Waterloo	5,283.88
4.	North Iowa Fair, Mason City	5,024.65
5.	Cedar Valley Fair, Cedar Falls	4,204.66

6.	Marshall County Fair, Marshalltown	3,875.35
7.	Southern Iowa Fair, Oskaloosa	3,188.50
8.	Henry County Fair, Mount Pleasant	2,812.08
9.	Bremer County Fair, Waverly	2,785.56
10.	Johnson County Fair, Iowa City	2,443.80
11.	Union District Fair, West Liberty	2,368.05
12.	Lyon County Fair, Rock Rapids	2,126.25
13.	Clinton County Fair, DeWitt	2,030.75

The total expense of conducting the fairs was $626,870.14, an increase of 22 per cent or $105,270.24 over the cost in 1915.

The table setting forth the number of head of live stock on exhibition and the amounts paid in premiums in the various departments shows a pronounced increase in every department over last year. This not only speaks well for the county fairs and shows they are growing along live stock and agricultural lines, but it shows the additional state aid appropriated for fairs by the last session of the legislature is doing for the fairs just what the fair managers contended it would.

There are presented herewith four tables compiled from the county fair reports filed with the department, which contain some interesting data for fair managers. In addition to the totals for 1916 the totals for 1914 and 1915 are given for comparative purposes.

Table No. 1 is a condensed financial statement showing balance on hand at the close of last year's business, the total receipts of fair, receipts from sources other than fair such as borrowed money, stock sold, subscriptions, etc., and the grand total receipts. The disbursement side of the table shows the total cost of fair, indebtedness of previous years paid during current year, amount expended for improvement during the year and the grand total disbursements: also the cash balance on hand or overdraft November 1, 1916, the estimated value of grounds and buildings and the present interest-bearing indebtedness.

Table No. 2 takes into consideration the receipts and cost of the 1916 fairs only. The receipts are itemized as follows: receipts from outside gates, grandstand and quarter stretch, entry fees, speed department, concessions and privileges, miscellaneous receipts, state aid received and the total receipts. The disbursements have been divided as follows: premiums paid in all departments except speed, amount paid for speed contests, cost of music and attractions, miscellaneous expense, the total cost of fair and the profit or loss on the 1916 fair.

Table No. 3 is a tabulation showing the total number of exhibitors at the fair, number of exhibitors in the live stock departments, the number of horses, cattle, swine, sheep and poultry on exhibition and the amount of premiums paid in each division. Also the amount of premiums paid on agricultural products, pantry and kitchen products, fine arts and the total premiums paid in all departments.

Table No. 4 sets forth the total attendance, total number of paid admissions, the admission fee charged adults, children and vehicles at the outside gate; also the day admission fee charged night grand stand performance.

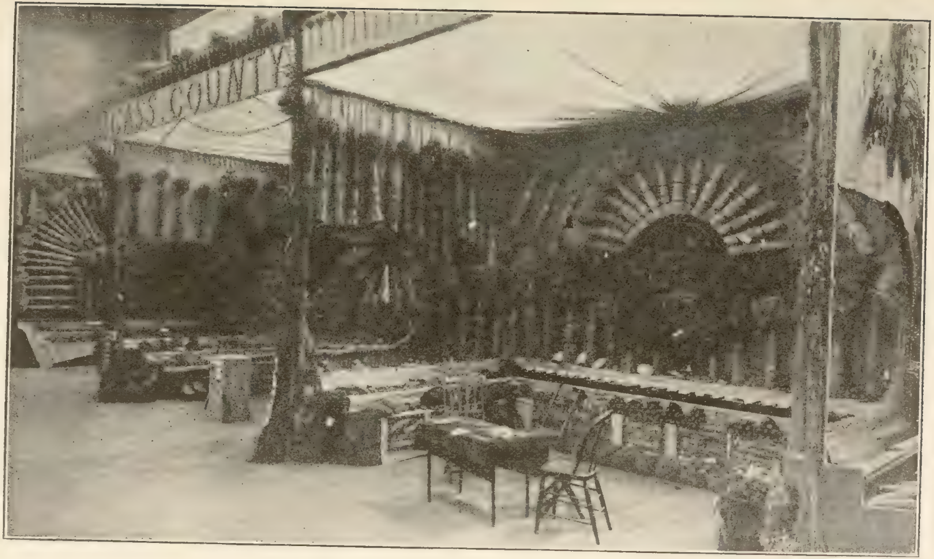
The reports filed with the department by the county fair secretaries contain the following information which is not incorporated in the tables referred to.

These reports show seventy-five associations own the grounds and buildings; three own part of the ground and lease part; the ground for one is owned by the county and the ground for another by the city; fifteen lease their grounds and four are street fairs that have no grounds or buildings.

The following fairs have received aid from the county.

North Iowa Fair for grounds	$8,000.00
Dickinson County Fair	400.00
Humboldt County Fair	58.00
Jasper County Fair	500.00
New Sharon District Fair	500.00
Eden District Fair	200.00
Marshall County Fair	500.00
Mills County Fair	500.00
Big Four District Fair, Fonda	150.00
Central Iowa Fair, Ames	400.00
Tama County Fair	700.00

These appropriations by the county have been expended for buildings or other improvements on the grounds.



Section of County Exhibits at 1916 Iowa State Fair.

TABLE NO. I—FINANCIAL STATEMENT OF COUNTY AND

Number	County	City or Town	Balance on hand	Receipts		
				Receipts of fair	Receipts from sources other than fair	Total receipts
1	Adair	Greenfield	$ 1,226.53	$ 6,009.29	$ 588.54	$ 7,824.36
2	Adams	Corning	29.38	4,181.64	435.06	4,646.08
3	Allamakee	Waukon	160.10	4,092.55	464.40	4,717.05
4	Audubon	Audubon		5,592.50	638.64	6.231.14
5	Benton	Vinton	235.43	5,168.40	527.70	5,931.53
6	Black Hawk	Waterloo		20,157.73	16,970.00	37,127.73
7	Black Hawk	Cedar Falls		21,215.60	800.00	22,015.60
8	Boone	Ogden	53.96	3,633.10	638.48	4,325.54
9	Bremer	Waverly	1,197.81	17,773.43	3.300.00	22,271.24
10	Buchanan	Independence		8,614.81	2,969.95	11,584.76
11	Buchanan	Aurora	408.15	1,256.95	295.20	1,960.30
12	Buena Vista	Alta		7,764.51	632.31	8.396.82
13	Butler	Allison	577.23	3,997.96	1,833.42	6.408.61
14	Calhoun	Manson	15.07	3,752.55	2,902.30	6,669.92
15	Calhoun	Rockwell City		6.704.68	1,059.32	7.764.00
16	Carroll	Carroll		4,331.15	580.31	4,911.46
17	Cass	Atlantic	744.06	9,980.31	1,530.67	12.255.04
18	Cedar	Tipton	79.43	4,395.60	970.93	5,445.96
19	Cerro Gordo	Mason City		20,651.39	3.354.00	24,005.39
20	Chickasaw	New Hampton		2,209.17	528.45	2,737.62
21	Chickasaw	Nashua	202.03	3,511.79	632.25	4,346.07
22	Clay	Spencer		6.00	1,203.01	1,209.01
23	Clayton	Strawberry Point	17.25	3,881.02	1,318.93	5,217.20
24	Clayton	Elkader		3,783.29	1,606.92	5,390.21
25	Clayton	National	36.43	1,793.85	702.25	2.532.53
26	Clinton	De Witt	271.51	9,597.57	800.00	10,669.08
27	Crawford	Arion	245.64	1,942.65	330.27	2,518.56
28	Davis	Bloomfield	125.21	6,497.69	692.53	7,315.43
29	Des Moines	Burlington	14,374.95	32,892.19	23.980.32	71,247.46
30	Dickinson	Spirit Lake		1,346.83	855.75	2.202.58
31	Fayette	West Union	2,156.49	9,868.93	664.35	12,689.77
32	Floyd	Charles City		250.10	356.43	606.53
33	Franklin	Hampton		5,734.89	839.22	6,574.11
34	Fremont	Tabor		432.80	204.44	637.24
35	Greene	Jefferson	205.74	6,520.70	624.61	7.351.05
36	Grundy	Grundy Center	1,035.67	3,075.15	689.23	4,800.05
37	Guthrie	Guthrie Center	935.36	6.177.34	624.05	7.736.75
38	Hancock	Britt		4,849.13	1,476.82	6,325.95
39	Hardin	Eldora	168.39	6,568.12	727.79	7.464.30
40	Harrison	Missouri Valley	598.64	3,319.30	627.75	4.545.69
41	Henry	Mt. Pleasant	208.18	11,461.18	800.00	12,469.36
42	Henry	Winfield	35.04	4,236.95	623.43	4,895.42
43	Humboldt	Humboldt	576.00	7,368.00	746.30	8,690.30
44	Iowa	Victor	51.27	1,486.55	145.05	1,682.87
45	Iowa	Williamsburg		1,704.14	553.06	2,257.20
46	Iowa	Marengo	316.31	1,980.05	391.68	2,688.04
47	Jackson	Maquoketa	776.82	5,340.81	659.75	6.777.38
48	Jasper	Newton	449.97	8.127.25	684.02	9.261.24
49	Jefferson	Fairfield		5,278.99	2,337.35	7.616.34
50	Johnson	Iowa City	445.48	5,244.88	800.00	6.490.36
51	Jones	Monticello	25.11	6,260.56	549.45	6,835.12
52	Jones	Anamosa		5,556.71	324.51	5,881.22
53	Keokuk	What Cheer	3,360.59	5,845.05	656.80	9,862.44
54	Kossuth	Algona	772.37	11,461.04	751.35	12.984.76
55	Lee	West Point	21.57	2,738.71	1,875.48	4.635.76
56	Lee	Donnellson		3,408.81	962.77	4,371.58
57	Linn	Central City	200.00	5.245.60	1,207.30	6,652.90
58	Linn	Marion	7.66	7,598.57	701.25	8.307.48
59	Louisa	Columbus Junction	117.06	6,844.11	3,136.00	10,097.17
60	Louisa	Morning Sun	38.95	126.20	814.75	979.90
61	Lucas	Derby	412.39	464.50	994.47	1,871.36
62	Lyon	Rock Rapids	1,765.18	13,073.62	2,800.00	17,638.80

DISTRICT FAIRS IN IOWA RECEIVING STATE AID 1916.

Disbursements				Balance or Overdraft		Assets and Liabilities		
Expense of fair	Indebtedness of previous years paid	Improvements 1916	Total disbursements	Balance Nov. 1, 1916	Overdraft Nov. 1, 1916	Value of grounds and buildings	Present indebtedness	Number
$ 4,935.70	------------	$ 1,106.10	$ 6,041.80	$ 1,782.56	----------	$ 12,000.00	$ 1,000.00	1
4,139.33	------------	219.01	4,358.34	287.74	----------	5,000.00	1,097.32	2
4,778.62	------------	338.50	5,117.12	----------	400.07	8,000.00	400.07	3
5,630.19	------------	350.00	5,980.19	250.95	----------	15,000.00	------------	4
5,371.58	------------	------------	5,371.58	559.95	----------	8,500.00	3,500.00	5
16,130.18	$ 5,193.72	12,997.53	34,321.43	2,806.30	----------	36,400.00	8,000.00	6
20,377.07	------------	------------	20,377.07	1,638.53	----------	70,000.00	37,000.00	7
4,531.43	154.73	193.98	4,880.14	----------	$ 551.60	12,000.00	6,500.00	8
20,357.23	------------	1,462.37	21,819.60	451.64	----------	24,000.00	4,500.00	9
9,641.01	2,342.25	200.00	12,183.26	----------	598.50	10,000.00	------------	10
912.54	------------	315.95	1,228.49	731.81	----------	1,000.00	------------	11
8,118.57	------------	221.04	8,339.61	57.21	----------	15,000.00	2,102.38	12
4,064.41	980.61	848.32	5,893.34	515.27	----------	4,500.00	800.00	13
6,448.63	------------	128.59	6,577.22	92.70	----------	7,875.00	1,400.00	14
6,257.42	686.82	708.03	7,652.27	111.73	----------	12,500.00	2,300.00	15
4,513.20	------------	------------	4,513.20	398.26	----------	11,200.00	5,429.80	16
9,034.89	1,000.00	406.68	10,441.57	1,813.47	----------	25,000.00	------------	17
3,964.20	634.90	784.52	5,383.62	62.34	----------	12,600.00	------------	18
23,184.61	1,700.00	4,447.60	29,332.21	----------	5,326.82	34,851.00	------------	19
3,352.75	829.52	555.01	4,737.28	----------	1,999.66	10,500.00	1,999.66	20
4,055.53	------------	200.00	4,255.53	90.54	----------	10,000,00	3,400.00	21
1,209.01	------------	------------	1,209.01	----------	----------	10,000.00	------------	22
4,632.00	180.00	400.00	5,212.00	5.20	----------	8,000.00	4,400.00	23
4,419.80	639.98	200.00	5,259.78	130.43	----------	8,000.00	6,200.00	24
1,834.03	385.00	------------	2,219.03	313.50	----------	5,000.00	3,000.00	25
8,107.53	------------	1,909.00	10,016.53	652.55	----------	9,000.00	1,500.00	26
2,093.06	------------	100.00	2,193.06	325.50	----------	2,600.00	------------	27
4,471.29	2,407.30	------------	6,878.59	436.84	----------	16,000.00	------------	28
31,131.69	33,846.69	4,417.16	69,395.54	1,851.92	----------	100,000.00	21,720.00	29
2,202.58	------------	------------	2,202.58	----------	----------	15,000.00	------------	30
7,494.91	------------	2,466.08	9,960.99	2,728.78	----------	23,000.00	------------	31
1,313.55	------------	300.00	1,613.55	----------	1,007.02	15,000.00	3,000.00	32
5,261.10	983.75	500.00	6,744.85	----------	170.74	6,000.00	4,900.00	33
637.24	------------	------------	637.24	----------	----------	------------	------------	34
3,726.60	------------	------------	3,726.60	3,624.45	----------	15,000.00	8,550.00	35
3,570.07	------------	521.49	4,091.56	717.49	----------	14,000.00	------------	36
5,441.37	------------	1,604.03	7,045.40	691.35	----------	10,000.00	------------	37
4,753.15	272.80	1,000.00	6,025.95	300.00	----------	16,000.00	4,000.00	38
6,952.55	214.00	297.75	7,464.30	----------	----------	8,000.00	3,600.00	39
3,069.72	------------	88.85	3,158.57	1,387.12	----------	10,000.00	------------	40
9,937.08	------------	840.00	10,777.08	1,692.28	----------	25,000.00	------------	41
3,993.71	------------	------------	3,993.71	901.72	----------	12,000.00	2,775.00	42
8,121.75	------------	100.00	8,221.75	468.55	----------	25,000.00	------------	43
1,251.57	------------	------------	1,251.57	431.30	----------	4,000.00	2,050.00	44
1,981.44	------------	232.16	2,213.60	43.60	----------	8,500.00	3,447.87	45
2,227.43	150.22	150.00	2,527.65	160.39	----------	4,500.00	2,700.00	46
5,864.68	180.00	489.62	6,534.30	243.08	----------	12,000.00	3,000.00	47
6,727.49	1,000.00	500.00	8,227.49	1,033.75	----------	25,000.00	4,000.00	48
6,135.98	200.00	515.67	6,851.65	764.69	----------	12,000.00	------------	49
7,855.22	------------	------------	7,855.22	----------	1,364.86	20,000.00	8,566.97	50
6,486.56	84.08	52.92	6,623.56	211.56	----------	10,000.00	------------	51
6,347.77	27.99	1,796.74	8,172.50	----------	2,291.28	10,000.00	------------	52
5,658.62	------------	523.46	6,182.08	3,680.34	----------	10,000.00	------------	53
9,554.36	------------	1,521.12	11,075.48	1,909.28	----------	30,000.00	1,000.00	54
4,612.95	------------	23.46	4,636.41	----------	.65	8,000.00	4,350.00	55
3,311.10	321.00	739.48	4,371.58	----------	----------	12,000.00	538.21	56
5,835.11	------------	1,000.00	6,835.11	----------	182.21	10,000.00	2,100.00	57
6,176.16	1,976.00	150.00	8,302.16	5.32	----------	12,000.00	8,576.00	58
6,928.97	1,334.82	1,208.29	9,472.08	625.09	----------	13,000.00	2,500.00	59
968.65	------------	------------	968.65	11.25	----------	------------	------------	60
1,194.42	------------	25.60	1,220.02	651.34	----------	------------	------------	61
12,019.14	163.06	2,214.35	14,396.55	3,242.25	----------	31,000.00	------------	62

TABLE NO. 1

Number	County	City or Town	Balance on hand	Receipts		
				Receipts of fair	Receipts from sources other than fair	Total receipts
63	Mahaska	New Sharon	120.33	2,159.93	389.37	2,669.63
64	Mahaska	Oskaloosa		15,395.26	40,460.00	55,855.26
65	Marion	Pella	217.14	2,099.45	694.76	3,011.35
66	Marshall	Rhodes	5.02	739.37	472.42	1,216.81
67	Marshall	Marshalltown	594.40	14,307.42	800.00	15,701.82
68	Mills	Malvern		6,604.68	619.71	7,224.39
69	Mitchell	Osage	164.48	3,392.45	2,703.72	6,260.65
70	Monona	Onawa	.13	3,243.55	777.30	4,020.98
71	Monroe	Albia	928.67	7,973.33	770.62	9,672.62
72	Muscatine	West Liberty	941.19	9,358.45	840.00	11,139.64
73	Muscatine	Wilton		3,483.11	630.74	4,113.85
74	O'Brien	Sutherland	102.49	4,776.60	360.39	5,239.48
75	O'Brien	Sheldon		8,496.72	615.83	9,112.55
76	Page	Shenandoah		9,884.90	3,863.85	13,748.75
77	Page	Clarinda	2,327.52	12,714.34	705.47	15,747.33
78	Pocahontas	Fonda	995.22	7,546.75	617.80	9,159.77
79	Pottawattamie	Avoca	20.12	3,543.60	462.45	4,026.17
80	Poweshiek	Malcom	50.57	2,618.65	1,562.50	4,231.72
81	Poweshiek	Grinnell	525.87	7,131.80	1,130.58	8,788.25
82	Sac	Sac City	1,952.87	7,821.25	1,681.63	11,455.75
83	Shelby	Harlan	712.91	8,323.25	694.80	9,730.96
84	Sioux	Orange City	550.73	2.565.10	430.29	3,546.12
85	Story	Ames	260.59	3,174.85	3,144.51	6,579.95
86	Tama	Toledo		6,462.48	2,755.79	9,218.27
87	Taylor	Bedford		5.762.43	543.81	6,306.24
88	Van Buren	Milton	46.44	2,814.00	428.55	3,288.99
89	Wapello	Ottumwa	688.85	989.67	675.00	2,353.52
90	Wapello	Eldon	25.18	4,853.41	354.33	5,232.92
91	Warren	Indianola	520.59	7,525.76	721.80	8,768.15
92	Wayne	Corydon		11.178.92	15,105.00	26,283.92
93	Wayne	Sewal	191.60	1,030.60	219.81	1,442.01
94	Wayne	Clio	288.92	93.50	764.15	1,146.57
95	Winnebago	Forest City	162.70	3.706.52	3,670.70	7,539.92
96	Winneshiek	Decorah	733.66	7,884.74	858.79	9.477.19
97	Woodbury	Sioux City		43,638.45	800.00	44.438.45
98	Worth	Northwood	468.18	2.235.00	421.82	3,125.00
99	Wright	Clarion		6,518.75	608.90	7,127.65
	Totals		$48,665.73	$ 616,173.74	$ 194,728.86	$ 859,568.33
	Totals for 1915		$36,480.71	$ 516,849.17	$ 188,684.12	$ 742,014.00
	Totals for 1914		$38,308.80	$ 504,241.80	$ 93,188.86	$ 635,750.46

—Continued.

Disbursements				Balance or Overdraft		Assets and Liabilities		
Expense of fair	Indebtedness of previous years paid	Improvements 1916	Total disbursements	Balance Nov. 1, 1916	Overdraft Nov. 1, 1916	Value of grounds and buildings	Present indebtedness	Number
2,568.67	----------	----------	2,568.67	100.96	----------	10,000.00	----------	63
14,450.37	----------	38,942.95	53,393.32	2,461.94	----------	45,000.00	10,000.00	64
2,569.32	388.34	214.86	3,172.52	----------	161.17	8,300.00	----------	65
1,180.70	85.00	----------	1,265.70	----------	48.89	2,000.00	75.00	66
12,695.91	939.00	1,494.84	15,129.75	572.07	----------	29,000.00	561.00	67
5,654.78	300.00	500.00	6,454.78	730.01	----------	15,000.00	10,000.00	68
4,285.65	350.00	1,625.00	6,260.65	----------	----------	7,600.00	----------	69
3,775.72	89.53	66.00	3,931.25	[illegible]	----------	14,000.00	----------	70
7,229.05	----------	833.64	8,062.69	[illegible]	----------	4,800.00	----------	71
8,161.61	700.00	504.78	9,366.39	1,773.25	----------	16,000.00	----------	72
4,511.11	----------	167.87	4,678.98	----------	[illegible]	3,500.00	140.00	73
3,905.32	----------	950.00	4,855.32	[illegible]	----------	8,500.00	2,350.00	74
7,314.42	214.80	2,034.36	9,563.58	----------	451.03	15,000.00	----------	75
9,274.20	4,842.02	356.80	14,473.02	----------	724.27	15,000.00	----------	76
9,272.65	----------	4,173.28	13,445.93	2,301.40	----------	7,509.00	----------	77
6,831.75	----------	1,350.75	8,182.50	977.27	----------	12,000.00	----------	78
3,654.13	----------	----------	3,654.13	372.04	----------	10,000.00	3,200.00	79
3,383.53	340.50	250.00	3,974.03	[illegible]	----------	9,000.00	1,000.00	80
7,445.90	1,400.00	565.41	9,411.31	----------	[illegible]	15,000.00	4,950.00	81
8,493.45	----------	1,473.05	9,966.50	1,489.25	----------	21,000.00	----------	82
7,093.23	----------	96.00	7,189.23	2,541.73	----------	24,000.00	----------	83
2,670.23	----------	543.20	3,213.43	332.69	----------	7,350.00	600.00	84
4,359.39	----------	117.00	4,476.39	2,103.56	----------	4,000.00	2,276.12	85
6,358.98	488.66	6,092.55	12,940.19	----------	3,721.92	25,000.00	11,000.00	86
5,209.19	----------	110.04	5,319.23	987.01	----------	6,000.00	----------	87
2,194.25	----------	----------	2,194.25	1,094.74	----------	6,000.00	4,200.00	88
1,831.42	----------	----------	1,831.42	522.10	----------	----------	----------	89
4,688.88	184.85	57.85	4,931.58	301.34	----------	7,500.00	4,500.00	90
6,296.41	----------	----------	6,296.41	2,471.74	----------	25,000.00	----------	91
8,022.80	----------	17,384.21	25,407.01	876.91	----------	20,000.00	3,000.00	92
1,270.51	----------	----------	1,270.51	171.50	----------	----------	----------	93
527.00	200.00	----------	727.00	419.57	----------	----------	300.00	94
4,426.06	507.35	2,749.34	7,682.75	----------	142.83	16,000.00	3,000.00	95
5,824.99	500.00	2,323.20	8,648.19	[illegible]	----------	10,000.00	----------	96
34,328.70	2,268.61	1,176.11	37,773.42	6,665.03	----------	200,000.00	----------	97
2,078.01	----------	33.64	2,111.65	1,013.35	----------	6,000.00	----------	98
7,681.75	----------	712.80	8,394.55	----------	[illegible]	13,000.00	8,200.00	99
$ 626,870.14	$ 71,687.90	$ 138,269.99	$ 836,828.03	$74,341.91	$21,601.61	$ 1,558,885.00	$ 261,155.40	
$ 521,597.90	$ 39,156.93	$ 102,102.92	$ 688,291.21	$63,491.98	$ 9,769.19	$ 988,128.44	$ 267,299.26	
$ 446,259.64	$ 35,133.30	$ 102,625.40	$ [illegible]	$[illegible]	$19,769.09	$ 1,100,420.00	$ 184,559.62	

TABLE NO. II—RECEIPTS AND DISBURSEMENTS

Number	County and City or Town	Receipts Ticket Sales Outside gates	 Grand stand	 Entry fees speed department	 Concessions and privileges	 Miscellaneous receipts of fair
1	Adair, Greenfield	$ 4,374.15	$ 210.85	$ 602.50	$ 475.60	$ 346.19
2	Adams, Corning	1,578.70	1,045.65	562.00	708.47	306.82
3	Allamakee, Waukon	2,900.00	272.14	421.75	428.65	70.01
4	Audubon, Audubon	4,080.90	438.10	259.65	575.25	238.60
5	Benton, Vinton	3,724.53	308.35	255.00	461.95	418.57
6	Black Hawk, Waterloo	11,147.00	----------	----------	6,803.10	2,207.63
7	Black Hawk, Cedar Falls	10,849.30	5,467.00	595.00	1,214.75	3,089.55
8	Boone, Ogden	2,507.05	276.40	215.00	424.25	210.40
9	Bremer, Waverly	8,956.61	2,363.75	510.00	1,846.21	4,096.86
10	Buchanan, Independence	3,682.65	710.40	2,047.00	1,121.03	1,053.73
11	Buchanan, Aurora	787.95	----------	20.00	101.50	347.50
12	Buena Vista, Alta	4,783.85	378.80	1,356.95	941.50	303.41
13	Butler, Allison	2,772.97	142.70	216.50	651.80	213.99
14	Calhoun, Manson	3,052.85	193.95	69.50	373.25	63.00
15	Calhoun, Rockwell City	3,559.00	621.75	1,058.75	916.30	548.88
16	Carroll, Carroll	2,431.00	424.00	258.00	561.00	657.15
17	Cass, Atlantic	6,338.09	1,388.65	280.00	885.95	1,087.62
18	Cedar, Tipton	2,986.60	479.25	260.00	492.90	176.85
19	Cerro Gordo, Mason City	11,181.15	4,810.25	580.00	3,189.50	800.49
20	Chickasaw, New Hampton	1,770.42	110.25	----------	219.50	109.00
21	Chickasaw, Nashua	2,251.89	565.00	----------	502.90	192.00
22	Clay, Spencer	----------	----------	----------	6.00	----------
23	Clayton, Strawberry Point	2,190.35	431.25	330.00	404.00	525.42
24	Clayton, Elkader	2,393.90	253.45	327.50	509.44	299.00
25	Clayton, National	1,410.05	59.70	----------	104.10	220.00
26	Clinton, De Witt	5,480.15	1,685.30	316.00	768.00	1,408.12
27	Crawford, Arion	1,506.00	80.25	30.70	295.65	30.05
28	Davis, Bloomfield	3,920.30	922.20	630.75	474.24	550.20
29	Des Moines, Burlington	15,745.00	7,725.82	1,945.00	3,891.45	3,584.92
30	Dickinson, Spirit Lake	1,132.63	70.00	50.00	33.00	60.20
31	Fayette, West Union	6 069.75	984.65	655.00	1,831.25	328.28
32	Floyd, Charles City	250.10	----------	----------	----------	----------
33	Franklin, Hampton	3,872.43	479.50	394.40	315.50	673.06
34	Fremont, Tabor	107.15	----------	----------	----------	325.65
35	Greene, Jefferson	4,249.15	972.00	----------	402.65	896.90
36	Grundy, Grundy Center	2,378.65	151.80	----------	353.00	191.70
37	Guthrie, Guthrie Center	4,640.19	----------	279.00	946.50	311.65
38	Hancock, Britt	3,200.81	464.55	667.50	576.27	----------
39	Hardin, Eldora	4,100.70	677.75	771.00	752.92	265.75
40	Harrison, Missouri Valley	2,651.35	255.50	10.00	264.10	138.35
41	Henry, Mt. Pleasant	5,086.60	1,234.15	1,700.00	1,245.20	2,195.23
42	Henry, Winfield	2,700.02	357.80	326.06	179.00	674.07
43	Humboldt, Humboldt	4,700.00	1,000.00	1,118.00	500.00	50.00
44	Iowa, Victor	972.85	75.00	-------	224.00	214.70
45	Iowa, Williamsburg	1,310.00	210.64	15.00	152.50	16.00
46	Iowa, Marengo	862.80	295.50	484.25	239.75	97.75
47	Jackson, Maquoketa	2,930.91	428.00	596.25	528.45	857.20
48	Jasper, Newton	4,380.25	1,453.85	135.00	677.40	1,480.75
49	Jefferson, Fairfield	3,633.99	308.20	620.45	605.05	111.30
50	Johnson, Iowa City	3,227.50	387.75	152.50	287.95	1,189.18
51	Jones, Monticello	3,770.00	785.45	305.00	877.50	522.61
52	Jones, Anamosa	3,252.07	848.65	715.00	609.24	131.75
53	Keokuk, What Cheer	2,817.70	511.85	1,464.00	412.00	639.50
54	Kossuth, Algona	8,386.24	990.80	260.00	1,202.00	622.00
55	Lee, West Point	1,032.99	----------	726.50	150.00	829.22
56	Lee, Donnellson	2,135.36	----------	552.50	266.70	454.25
57	Linn, Central City	3,035.50	950.10	----------	549.60	710.40
58	Linn, Marion	5,831.76	1,108.20	425.00	718.50	1,515.11
59	Louisa, Columbus Junction	4,151.90	656.50	550.00	747.50	738.21
60	Louisa, Morning Sun	----------	----------	----------	66.20	60.00

OF COUNTY AND DISTRICT FAIRS IN IOWA 1916.

Receipts		Disbursements							
State aid	Total receipts of fair	Premiums other than for speed	Speed premiums	Music and attractions	Miscellaneous expense of fair	Total disbursements	Profit or loss	(+) (—)	Number
$ 588.54	$ 6,597.83	$ 980.90	$ 1,570.00	$ 1,323.00	$ 1,061.80	$ 4,935.70	$ 1,662.13	+	1
435.06	4,616.70	725.10	1,574.31	853.50	986.42	4,139.33	477.37	+	2
464.40	4,556.95	774.00	1,008.45	1,670.66	1,325.51	4,778.62	221.67	—	3
638.64	6,231.14	1,193.20	1,725.00	1,300.00	1,411.99	5,630.19	600.95	+	4
527.70	5,696.10	879.50	1,226.00	1,240.00	2,026.08	5,371.58	324.52	+	5
800.00	20,957.73	5,283.88	------------	1,886.21	8,960.09	16,130.18	4,827.55	+	6
800.00	22,015.60	4,204.66	2,713.35	5,727.50	7,731.56	20,377.07	1,638.53	+	7
638.48	4,271.58	1,192.42	1,120.00	1,475.83	743.18	4,531.43	259.85	—	8
800.00	18,573.43	2,785.56	2,507.25	4,941.10	10,123.32	20,357.23	1,783.80	—	9
769.95	9,384.76	1,849.85	3,525.00	2,072.75	2,193.41	9,641.01	256.25	—	10
295.20	1,552.15	492.00	89.00	------------	331.54	912.54	639.61	+	11
532.31	8,296.82	887.19	2,894.10	2,243.19	2,094.09	8,118.57	178.25	+	12
515.28	4,513.24	858.80	490.50	1,433.24	1,281.87	4,064.41	448.83	+	13
708.21	4,460.76	1,541.05	375.00	1,751.50	2,781.08	6,448.63	1,987.87	—	14
671.24	7,375.92	1,356.20	2,480.00	1,330.00	1,091.22	6,257.42	1,118.50	+	15
455.31	4,786.46	758.85	1,643.65	485.22	1,625.48	4,513.20	273.26	+	16
780.67	10,760.98	1,903.37	2,371.43	1,418.00	3,342.09	9,034.89	1,726.09	+	17
678.68	5,074.28	1,393.40	1,177.50	380.00	1,013.30	3,964.20	1,110.08	+	18
800.00	21,451.39	5,024.65	1,880.00	8,431.79	7,848.17	23,184.61	1,733.22	—	19
528.45	2,737.62	880.75	335.00	1,950.00	187.00	3,352.75	615.13	—	20
632.25	4,144.04	1,161.25	500.00	1,138.24	1,256.04	4,055.53	88.51	+	21
435.90	441.90	725.50	------------	200.00	283.51	1,209.01	767.11	—	22
418.93	4,299.95	698.21	1,125.00	1,485.00	1,323.79	4,632.00	332.05	—	23
606.92	4,390.21	1,034.60	1,075.00	1,875.00	435.20	4,419.80	29.59	—	24
302.25	2,096.10	503.75	40.00	590.00	700.28	1,834.03	262.07	+	25
800.00	10,397.57	2,030.75	1,800.00	900.00	3,376.78	8,107.53	2,290.04	+	26
330.27	2,272.92	550.45	490.00	550.00	502.61	2,093.06	179.86	+	27
692.53	7,190.22	1,462.65	1,078.45	407.50	1,522.69	4,471.29	2,718.93	+	28
800.00	33,692.19	10,923.25	7,435.85	4,306.50	8,466.09	31,131.69	2,560.50	+	29
422.52	1,769.35	704.20	575.00	272.50	650.88	2,202.58	433.23	—	30
634.35	10,503.28	1,171.75	1,435.00	2,637.10	2,251.06	7,494.91	3,008.37	+	31
356.43	606.53	594.05	245.00	140.00	334.50	1,313.55	707.02	—	32
624.22	6,359.11	1,121.10	1,830.00	1,410.00	900.00	5,261.10	1,098.01	+	33
196.41	629.21	327.35	------------	------------	309.89	637.24	8.03	—	34
624.61	7,145.31	1,123.05	378.25	1,221.00	1,004.30	3,726.60	3,418.71	+	35
620.90	3,696.05	1,104.52	165.00	1,160.00	1,140.55	3,570.07	125.98	+	36
624.05	6,801.39	1,120.25	1,540.00	1,367.25	1,413.87	5,441.37	1,360.02	+	37
476.82	5,325.95	794.70	1,640.00	640.00	1,678.45	4,753.15	572.80	+	38
727.79	7,295.91	1,638.95	2,157.00	1,550.00	1,606.60	6,952.55	343.36	+	39
627.75	3,947.05	1,138.75	104.00	1,234.75	592.22	3,069.72	877.33	+	40
800.00	12,261.18	2,812.08	3,600.00	1,525.00	2,000.00	9,937.08	2,324.10	+	41
623.43	4,860.38	1,112.15	1,470.50	759.26	651.80	3,993.71	866.67	+	42
773.15	8,141.15	1,865.75	3,250.00	1,906.00	1,100.00	8,121.75	19.40	+	43
145.65	1,631.60	241.75	271.00	325.00	413.82	1,251.57	380.03	+	44
252.86	1,957.00	421.44	300.00	1,075.00	185.00	1,981.44	24.44	—	45
196.68	2,176.73	327.80	1,117.50	280.00	502.13	2,227.43	50.70	—	46
659.75	6,000.56	1,298.77	1,944.00	1,175.00	1,446.91	5,864.68	135.88	+	47
684.02	8,811.27	1,420.10	1,030.00	2,572.50	1,704.89	6,727.49	2,083.78	+	48
557.10	5,836.09	928.50	2,625.00	1,410.00	1,172.48	6,135.98	299.89	—	49
800.00	6,044.88	2,443.80	1,783.50	1,248.00	2,379.83	7,855.22	1,810.34	—	50
549.45	6,810.01	915.75	1,290.00	2,410.66	1,880.15	6,496.56	313.45	+	51
224.51	5,881.22	540.85	1,460.37	3,017.25	1,329.30	6,347.77	466.55	—	52
656.80	6,501.85	1,284.00	2,850.00	1,052.25	472.37	5,658.62	843.23	+	53
751.35	12,212.39	1,756.75	2,154.84	2,342.00	3,300.77	9,554.36	2,658.03	+	54
481.00	3,219.71	802.75	1,630.00	559.85	1,620.35	4,612.95	1,393.24	—	55
424.76	3,833.37	707.60	1,327.50	420.00	856.00	3,311.10	522.27	+	56
688.84	5,924.40	1,444.00	257.00	1,823.00	2,311.11	5,835.11	89.29	+	57
701.25	8,299.82	1,506.25	1,325.00	1,425.00	1,919.91	6,176.16	2,123.66	+	58
736.00	7,580.11	1,680.00	1,880.50	1,774.75	1,593.72	6,928.97	651.14	+	59
339.75	465.95	566.25	------------	------------	402.40	968.65	502.70	—	60

TABLE NO. II

Number	County and City or Town	Receipts				
		Ticket Sales		Entry fees speed department	Concessions and privileges	Miscellaneous receipts of fair
		Outside gates	Grand stand			
61	Lucas, Derby	459.50	----------	----------	----------	5.00
62	Lyon, Rock Rapids	7,102.80	2,140.10	1,345.00	1,868.89	616.83
63	Mahaska, New Sharon	1,304.10	[illegible]	----------	188.20	280.33
64	Mahaska, Oskaloosa	[illegible]	2,257.40	1,233.75	1,305.26	1,404.35
65	Marion, Pella	1,158.10	174.20	110.00	80.45	576.70
66	Marshall, Rhodes	508.20	----------	----------	114.00	117.17
67	Marshall, Marshalltown	8,829.75	1,815.55	1,123.50	1,839.47	699.15
68	Mills, Malvern	4,378.60	450.00	675.50	557.75	542.83
69	Mitchell, Osage	[illegible]	278.75	40.00	[illegible]	[illegible]
70	Monona, Onawa	1,617.40	591.20	88.75	252.50	693.70
71	Monroe, Albia	4,360.30	[illegible]	1,190.00	858.00	775.53
72	Muscatine, West Liberty	[illegible]	1,316.95	861.00	821.10	677.20
73	Muscatine, Wilton	1,660.15	222.60	679.00	348.25	573.11
74	O'Brien, Sutherland	3,750.90	233.00	----------	442.25	307.45
75	O'Brien, Sheldon	4,542.45	417.50	1,850.00	671.85	984.92
76	Page, Shenandoah	[illegible]	272.30	472.25	921.50	392.00
77	Page, Clarinda	[illegible]	972.00	167.40	[illegible]	3,227.92
78	Pocahontas, Fonda	2,972.00	329.75	2,300.50	1,150.00	794.50
79	Pottawattamie, Avoca	[illegible]	617.05	99.75	546.95	390.11
80	Poweshiek, Malcom	[illegible]	371.00	487.50	214.10	465.40
81	Poweshiek, Grinnell	3,726.67	1,670.50	326.50	879.50	528.63
82	Sac, Sac City	4,363.50	871.00	821.00	1,055.75	710.00
83	Shelby, Harlan	4,753.17	970.82	81.00	[illegible]	1,918.26
84	Sioux, Orange City	1,853.75	133.35	176.00	192.00	210.00
85	Story, Ames	1,635.70	----------	----------	227.00	1,312.15
86	Tama, Toledo	[illegible]	524.55	322.50	[illegible]	750.75
87	Taylor, Bedford	[illegible]	226.50	1,019.00	821.25	364.78
88	Van Buren, Milton	[illegible]	[illegible]	149.00	211.75	276.00
89	Wapello, Ottumwa	[illegible]	----------	----------	8.50	853.72
90	Wapello, Eldon	2,690.70	[illegible]	824.00	710.65	325.06
91	Warren, Indianola	[illegible]	[illegible]	192.50	515.30	78.00
92	Wayne, Corydon	6,674.75	2,202.47	1,333.00	[illegible]	187.95
93	Wayne, Sewal	----------	30.45	198.50	280.70	520.95
94	Wayne, Clio	----------	----------	----------	36.00	57.50
95	Winnebago, Forest City	[illegible]	729.70	----------	325.00	307.07
96	Winneshiek, Decorah	5,287.75	803.00	385.00	912.75	496.00
97	Woodbury, Sioux City	27,771.25	6,595.75	882.25	4,478.45	3,910.75
98	Worth, Northwood	1,483.45	[illegible]	50.00	133.50	437.45
99	Wright, Clarion	3,793.75	405.00	1,600.00	521.00	196.00
	Totals	$ 282,555.23	$77,470.19	$47,204.11	$71,984.26	$67,259.95
	Totals for 1915	[illegible]	[illegible]	$37,242.95	$58,592.11	$75,643.78
	Totals for 1914	[illegible]	$45,876.47	$41,262.11	$55,279.23	$73,463.78

—CONTINUED.

Receipts		Disbursements							
State aid	Total receipts of fair	Premiums other than for speed	Speed premiums	Music and attractions	Miscellaneous expense of fair	Total disbursements	Profit or loss	(+) (—)	Number
530.82	995.32	884.70	------------	42.50	267.22	1,194.42	199.10	—	61
800.00	13,873.62	2,126.25	4,215.01	2,400.00	3,277.88	12,019.14	1,854.48	+	62
344.37	2,504.30	573.95	840.00	295.00	859.72	2,568.67	64.37	—	63
800.00	16,195.26	3,188.50	3,062.25	2,302.27	5,897.35	14,450.37	1,744.89	+	64
494.76	2,594.21	824.60	500.00	405.00	839.72	2,569.32	24.89	+	65
387.42	1,126.79	645.70	------------	175.00	360.00	1,180.70	53.91	—	66
800.00	15,107.42	3,875.35	2,531.61	1,950.00	4,338.95	12,695.91	2,411.51	+	67
619.71	7,224.39	1,098.55	1,805.00	1,475.00	1,315.83	5,694.38	1,530.01	+	68
613.93	4,006.38	1,069.65	725.00	1,220.00	1,271.00	4,285.65	279.27	—	69
600.30	3,843.85	1,001.50	729.00	879.00	1,166.22	3,775.72	68.13	+	70
770.62	8,743.95	1,853.10	3,175.00	264.55	1,936.40	7,229.05	1,514.90	+	71
800.00	10,198.45	2,368.05	2,255.00	2,004.91	1,533.65	8,161.61	2,036.84	+	72
630.74	4,113.85	1,153.70	1,927.75	316.00	1,113.66	4,511.11	397.26	—	73
500.30	5,136.99	600.65	625.00	2,015.00	664.67	3,905.32	1,231.67	+	74
615.83	9,112.55	1,079.15	3,600.00	1,410.00	1,225.27	7,314.42	1,798.13	+	75
713.85	10,598.75	1,569.25	1,696.00	2,446.00	3,562.95	9,274.20	1,324.55	+	76
705.47	13,419.81	1,527.35	1,615.00	2,649.42	3,480.88	9,272.65	4,147.16	+	77
617.80	8,164.55	1,089.00	3,460.00	875.00	1,407.75	6,831.75	1,332.80	+	78
462.45	4,006.05	770.76	1,313.42	519.00	1,050.95	3,654.13	351.92	+	79
562.50	3,181.15	997.50	1,155.00	600.00	631.03	3,383.53	202.38	—	80
713.83	7,845.63	1,569.15	1,290.00	2,487.29	2,099.46	7,445.90	399.73	+	81
717.13	8,538.38	1,585.65	2,585.00	2,633.62	1,689.18	8,493.45	44.93	+	82
694.80	9,018.05	1,474.00	1,510.00	2,697.00	1,412.23	7,093.23	1,924.82	+	83
430.29	2,995.39	717.15	756.70	575.00	621.38	2,670.23	324.16	+	84
747.37	3,922.20	1,736.75	------------	1,233.87	1,388.77	4,359.39	437.19	—	85
755.79	7,218.27	1,778.95	1,468.48	1,848.00	1,263.55	6,358.98	859.29	+	86
198.81	5,961.24	331.35	2,210.00	1,772.00	895.84	5,209.19	752.05	+	87
428.55	3,242.55	714.25	1,480.00	------------	------------	2,194.25	1,048.30	+	88
675.00	1,664.67	1,375.00	------------	------------	456.42	1,831.42	166.75	—	89
354.83	5,207.74	590.55	2,267.50	720.00	1,110.83	4,688.88	518.86	+	90
721.80	8,247.56	1,609.00	1,630.00	2,134.00	923.41	6,296.41	1,951.15	+	91
732.00	11,910.92	1,661.00	3,565.00	1,040.75	1,756.05	8,022.80	3,888.12	+	92
219.81	1,250.41	366.25	575.00	------------	329.26	1,270.51	20.10	—	93
254.55	348.05	424.25	------------	20.00	82.75	527.00	178.95	—	94
297.63	4,004.15	496.05	252.00	2,896.28	781.73	4,426.06	421.91	—	95
333.79	8,223.29	564.65	960.00	2,475.00	1,825.34	5,824.99	2,398.30	+	96
800.00	44,438.45	8,753.50	4,704.90	8,965.39	11,904.91	34,328.70	10,109.75	+	97
421.82	2,656.82	703.24	365.00	537.00	472.77	2,078.01	578.81	+	98
608.90	7,127.65	1,044.50	2,560.00	2,865.00	1,212.25	7,681.75	554.10	—	99
$56,870.67	$ 703,344.41	$ 144,703.25	$ 149,285.42	$ 151,242.79	$ 181,638.68	$ 626,870.14	$93,132.24 $16,657.97	+ —	
$48,685.98	$ 564,935.64	$ 117,439.10	$ 127,951.22	$ 115,227.34	$ 160,982.24	$ 521,599.90	$62,230.80 $18,895.06	+ —	
$28,131.27	$ 504,241.80	$ 96,267.05	$ 136,452.46	$ 93,975.14	$ 139,564.89	$ 466,259.54	$59,998.18 $22,015.92	+ —	

TABLE NO. III—TOTAL NUMBER OF EXHIBITORS, NUMBER HORSES, CATTLE, SHEEP, SWINE AND POULTRY ON EACH

Number	County and City or Town	Number of exhibitors	Number of exhibitors live stock dept.	Horses		Cattle		Swine
				No. exhibited	Premiums paid	No. exhibited	Premiums paid	No. exhibited
1	Adair, Greenfield	247	41	63	$ 279.50	70	$ 103.00	96
2	Adams, Corning	85	22	25	25.50	29	109.00	65
3	Allamakee, Waukon	250	35	40	144.00	46	186.00	32
4	Audubon, Audubon	430	47	61	344.50	58	274.00	240
5	Benton, Vinton	98	41	42	248.00	102	294.00	60
6	Black Hawk, Waterloo	203	53	------	------------	709	5,283.88	--------
7	Black Hawk, Cedar Falls	820	78	94	787.83	232	1,008.57	212
8	Boone, Ogden	171	16	61	558.75	28	195.00	--------
9	Bremer, Waverly	892	84	140	430.00	286	918.50	380
10	Buchanan, Independence	197	47	89	278.50	223	786.00	158
11	Buchanan, Aurora	100	39	55	92.50	15	49.00	35
12	Buena Vista, Alta	143	22	23	109.50	29	126.00	37
13	Butler, Allison	150	25	20	177.50	30	118.50	40
14	Calhoun, Manson	272	45	69	276.00	47	276.50	54
15	Calhoun, Rockwell City	114	32	72	268.50	81	332.00	160
16	Carroll, Carroll	61	16	------	------------	39	272.65	71
17	Cass, Atlantic	197	105	195	[illegible]	40	261.50	240
18	Cedar, Tipton	725	36	79	512.50	29	258.00	34
19	Cerro Gordo, Mason City	1,930	100	165	1,051.00	293	1,612.00	150
20	Chickasaw, New Hampton	95	32	28	162.00	49	155.50	63
21	Chickasaw, Nashua	180	99	138	355.50	104	215.00	46
22	Clay, Spencer	51	38	75	192.50	70	270.00	81
23	Clayton, Strawberry Point	284	21	36	128.25	10	55.00	63
24	Clayton, Elkader	179	19	20	131.00	60	200.00	127
25	Clayton, National	[illegible]	12	11	66.00	------	------------	44
26	Clinton, De Witt	364	45	44	289.00	72	461.00	160
27	Crawford, Arion	103	20	15	55.95	27	100.00	50
28	Davis, Bloomfield	293	41	66	554.50	21	171.50	51
29	Des Moines, Burlington	725	90	260	4,772.50	287	2,402.00	153
30	Dickinson, Spirit Lake	100	55	130	180.50	60	135.50	40
31	Fayette, West Union	269	41	139	368.00	36	136.75	165
32	Floyd, Charles City	77	25	28	191.00	28	65.00	111
33	Franklin, Hampton	143	55	94	288.50	75	350.00	79
34	Fremont, Tabor	96	38	51	72.00	26	32.00	36
35	Greene, Jefferson	338	76	78	230.00	------	258.00	--------
36	Grundy, Grundy Center	208	34	34	148.68	89	413.25	66
37	Guthrie, Guthrie Center	73	29	32	126.07	47	246.50	246
38	Hancock, Britt	102	29	68	136.15	78	153.95	52
39	Hardin, Eldora	497	43	95	322.50	120	357.00	120
40	Harrison, Missouri Valley	163	41	28	161.00	59	218.00	76
41	Henry, Mt. Pleasant	311	87	191	652.00	208	680.50	228
42	Henry, Winfield	99	26	85	290.00	55	259.00	49
43	Humboldt, Humboldt	168	41	79	408.00	58	276.00	190
44	Iowa, Victor	62	10	11	67.00	4	12.00	--------
45	Iowa, Williamsburg	160	8	8	60.40	10	37.00	1
46	Iowa, Marengo	82	7	9	44.00	10	96.00	17
47	Jackson, Maquoketa	228	67	81	298.00	72	277.85	98
48	Jasper, Newton	184	25	92	256.60	60	155.25	216
49	Jefferson, Fairfield	94	15	70	307.25	20	83.50	24
50	Johnson, Iowa City	171	43	74	915.50	110	895.30	77
51	Jones, Monticello	276	16	52	211.50	46	194.00	--------
52	Jones, Anamosa	172	------	------	------------	------	------------	--------
53	Keokuk, What Cheer	129	33	43	251.50	47	281.50	66
54	Kossuth, Algona	307	64	60	297.50	112	387.00	230
55	Lee, West Point	73	22	19	329.00	30	116.00	16
56	Lee, Donnellson	61	18	49	367.00	------	------------	5
57	Linn, Central City	250	50	100	295.50	125	360.00	75
58	Linn, Marion	265	95	134	342.50	88	393.00	81

EXHIBITORS IN LIVE STOCK DEPARTMENTS, NUMBER EXHIBITION AND AMOUNT OF PREMIUMS PAID IN DIVISION.

Swine	Sheep		Poultry		Premiums paid agricultural department	Premiums paid pantry and kitchen departments	Premiums paid fine arts department	Premiums paid all other departments	Number
Premiums paid	No. exhibited	Premiums paid	No. exhibited	Premiums paid					
$ 142.75	20	$ 41.00	125	$ 57.00	$ 67.00	$ 37.65	$ 87.75	$ 75.25	1
178.00	62	94.00	65	29.75	48.25	58.00	85.00	97.60	2
21.00	43	80.00	65	30.50	55.75	53.00	123.75	80.00	3
164.50	------	------	160	70.85	185.60	104.05	9.65	40.65	4
137.00	19	34.50	130	75.00	17.00	6.50	67.50	------	5
------	------	------	------	------	------	------	------	------	6
485.00	168	340.00	85	61.30	588.82	106.45	393.19	433.50	7
------	18	58.00	116	52.65	20.30	143.10	113.45	51.17	8
259.00	84	174.25	460	103.50	175.75	64.60	169.25	490.71	9
294.50	39	70.00	------	------	51.25	58.00	76.85	234.75	10
64.00	15	35.00	150	109.50	60.00	10.25	47.75	24.00	11
103.50	13	13.75	31	18.50	52.25	83.25	153.75	226.69	12
112.00	------	------	100	86.30	85.75	27.50	6.75	244.50	13
158.00	6	14.50	241	148.50	183.65	134.10	54.85	334.95	14
234.00	23	62.00	215	164.00	107.25	51.25	31.00	106.20	15
221.15	------	------	------	------	52.75	208.30	4.00	------	16
385.68	63	85.00	287	77.88	165.83	89.40	143.60	123.70	17
92.50	29	99.00	131	57.30	79.65	70.35	188.70	36.00	18
597.00	108	322.00	246	77.50	581.50	104.10	329.50	350.05	19
127.00	21	53.00	90	43.50	87.25	68.00	56.75	127.75	20
69.00	28	21.50	295	94.75	64.75	53.75	168.50	118.50	21
146.00	16	75.00	------	------	43.00	------	------	------	22
103.50	5	20.00	61	31.25	57.25	78.25	136.50	88.21	23
236.00	10	54.00	30	27.00	88.65	92.00	44.45	161.50	24
83.00	10	27.00	22	8.50	81.95	71.95	28.25	137.10	25
212.00	34	74.00	72	51.00	212.00	194.50	396.50	140.75	26
22.00	------	------	36	8.00	115.75	48.00	------	130.75	27
164.00	41	135.00	150	64.40	62.50	63.00	177.00	70.75	28
971.50	139	851.00	962	483.00	565.00	103.25	198.00	576.50	29
84.00	35	38.00	------	------	179.50	30.70	24.00	32.00	30
235.00	26	15.00	200	52.75	105.75	22.25	81.25	155.00	31
127.00	------	------	50	16.50	37.80	24.75	60.50	71.50	32
155.50	------	------	156	62.80	68.20	42.50	31.70	121.90	33
32.50	4	16.00	------	------	88.25	41.35	42.25	------	34
191.00	------	48.00	------	36.70	57.25	41.60	88.50	172.00	35
104.97	4	6.65	74	59.85	29.03	49.50	119.70	172.89	36
314.15	22	12.05	179	51.34	57.39	200.15	112.60	------	37
94.85	33	36.95	140	32.25	95.95	84.50	113.60	46.50	38
112.00	106	248.00	275	55.40	51.25	54.40	128.50	309.90	39
230.00	13	22.00	96	74.25	99.00	66.00	108.50	130.00	40
326.00	85	197.00	509	188.75	137.25	100.50	200.80	329.28	41
94.00	21	52.00	125	62.50	86.25	99.15	158.25	19.00	42
236.00	------	------	90	63.50	151.25	98.00	66.00	507.00	43
------	3	10.00	32	10.00	68.50	12.50	------	61.75	44
1.60	------	------	160	58.40	56.00	25.62	36.42	146.00	45
68.00	7	17.00	39	25.70	9.00	7.00	6.00	55.19	46
192.00	52	84.00	168	62.00	81.20	95.60	208.12	------	47
232.75	26	38.25	201	43.83	80.53	89.75	240.56	277.58	48
88.00	------	------	30	12.50	75.75	42.50	180.50	138.50	49
171.00	------	------	300	202.50	37.25	61.50	127.75	33.00	50
------	------	------	82	26.75	85.25	102.00	143.75	152.50	51
------	------	------	------	------	72.00	41.25	286.00	141.60	52
269.00	8	22.50	637	237.00	41.00	87.00	62.00	29.50	53
235.00	8	12.00	300	13.00	243.25	150.00	230.00	159.00	54
21.00	16	43.00	27	17.25	124.00	34.00	98.50	25.00	55
14.00	28	43.50	58	20.00	168.50	32.10	69.50	2.00	56
142.50	12	32.00	230	70.00	259.50	45.50	121.00	118.00	57
165.00	14	77.00	114	49.75	210.00	47.25	69.75	152.00	58

TABLE NO. III

Number	County and City or Town	Number of exhibitors	Number of exhibitors live stock dept.	Horses		Cattle		Swine
				No. exhibited	Premiums paid	No. exhibited	Premiums paid	No. exhibited
59	Louisa, Columbus Junction	194	38	59	297.50	49	276.00	77
60	Louisa, Morning Sun	208	70	186	435.00	------	----------	--------
61	Lucas, Derby	--------	87	111	199.50	57	127.50	10
62	Lyon, Rock Rapids	264	66	94	427.00	101	787.00	271
63	Mahaska, New Sharon	200	48	42	196.00	26	63.00	63
64	Mahaska, Oskaloosa	580	128	149	996.00	111	806.00	164
65	Marion, Pella	220	21	53	253.00	39	149.50	28
66	Marshall, Rhodes	237	35	78	111.00	50	78.00	75
67	Marshall, Marshalltown	1,066	75	157	400.00	224	1,063.00	525
68	Mills, Malvern	80	35	70	424.00	46	253.00	120
69	Mitchell, Osage	160	28	54	185.50	122	361.00	119
70	Monona, Onawa	112	------	76	180.00	37	215.00	73
71	Monroe, Albia	198	66	84	607.10	58	299.20	119
72	Muscatine, West Liberty	272	62	128	622.00	82	587.00	92
73	Muscatine, Wilton	217	26	21	153.00	60	241.00	30
74	O'Brien, Sutherland	142	38	39	146.50	28	80.50	58
75	O'Brien, Sheldon	264	51	65	249.00	57	293.50	109
76	Page, Shenandoah	185	59	60	519.00	55	301.00	138
77	Page, Clarinda	167	38	123	453.20	46	240.80	87
78	Pocahontas, Fonda	217	48	75	202.50	48	229.75	21
79	Pottawattamie, Avoca	169	39	29	131.00	59	156.00	114
80	Poweshiek, Malcom	115	38	35	192.00	25	187.00	36
81	Poweshiek, Grinnell	210	48	40	204.00	67	331.00	132
82	Sac, Sac City	251	33	77	359.00	34	293.00	121
83	Shelby, Harlan	181	51	109	373.75	71	390.00	114
84	Sioux, Orange City	138	41	43	185.00	34	198.00	51
85	Story, Ames	378	65	160	502.00	70	256.00	140
86	Tama, Toledo	285	85	62	220.00	100	505.50	264
87	Taylor, Bedford	55	12	4	31.00	41	120.50	40
88	Van Buren, Milton	86	20	50	394.50	2	9.00	25
89	Wapello, Ottumwa	144	41	54	196.50	52	409.00	78
90	Wapello, Eldon	73	21	52	191.50	15	114.00	37
91	Warren, Indianola	174	48	85	419.50	44	231.50	31
92	Wayne, Corydon	225	41	60	421.00	50	325.50	40
93	Wayne, Sewal	87	21	33	180.00	------	----------	--------
94	Wayne, Clio	158	44	64	137.00	40	155.00	17
95	Winnebago, Forest City	72	12	11	33.50	18	66.50	74
96	Winneshiek, Decorah	125	15	10	38.50	15	61.00	100
97	Woodbury, Sioux City	647	293	168	860.00	264	3,208.00	2,264
98	Worth, Northwood	225	36	38	146.40	52	102.45	54
99	Wright, Clarion	428	33	22	105.00	52	386.00	61
	Totals	23,955	1,454	6,836	$ 32,877.66	7,080	$ 37,440.65	11,151
	Totals for 1915	20,687	1,144	6,036	$ 26,913.53	5,270	$ 27,628.92	9,377
	Totals for 1914	16,717	3,432	5,223	$ 21,639.38	4,859	$ 23,372.73	7,759

—CONTINUED.

Swine	Sheep		Poultry						
Premiums paid	No. exhibited	Premiums paid	No. exhibited	Premiums paid	Premiums paid agricultural department	Premiums paid pantry and kitchen departments	Premiums paid fine arts department	Premiums paid all other departments	Number
343.00	12	28.00	450	267.50	45.50	----------	------------	422.50	59
-----------	-----	----------	--------	----------	51.90	----------	------------	79.35	60
10.00	55	78.50	174	41.50	186.25	89.45	67.00	85.00	61
556.00	20	37.00	79	35.00	76.00	58.00	------------	149.75	62
75.00	24	36.00	60	13.50	75.50	75.25	39.70	------------	63
325.00	38	120.00	320	133.90	131.00	48.25	393.25	235.10	64
56.00	24	27.50	143	69.50	34.90	37.25	18.50	178.45	65
107.00	18	17.00	148	42.50	66.75	50.70	25.25	147.50	66
524.00	165	364.00	1,140	260.00	165.00	107.00	542.00	450.35	67
133.00	-----	----------	135	34.00	61.00	76.60	116.95	------------	68
152.50	16	42.00	300	53.10	69.05	15.75	131.25	59.50	69
121.00	11	25.00	75	37.00	190.50	58.00	33.50	141.50	70
366.70	49	197.20	306	129.00	51.25	49.00	134.90	18.75	71
208.00	60	133.00	150	152.00	144.10	99.00	222.00	200.95	72
83.00	6	27.00	356	202.50	143.00	66.20	61.25	176.15	73
96.00	27	35.75	72	36.25	57.25	32.50	33.50	82.40	74
240.50	3	6.00	119	42.25	22.65	31.65	49.00	141.60	75
165.00	10	43.00	275	63.00	91.50	70.00	235.00	81.75	76
188.00	113	187.70	156	24.80	86.25	80.25	75.75	190.60	77
66.50	13	33.75	150	45.25	55.50	75.25	192.25	188.25	78
133.00	14	48.00	67	37.26	----------	----------	------------	265.50	79
141.00	14	27.00	62	19.00	79.25	63.50	184.25	44.50	80
211.00	14	30.00	512	300.25	77.25	62.25	95.25	258.15	81
193.50	15	37.00	174	81.00	65.25	213.35	28.65	236.75	82
225.00	-----	----------	101	47.95	33.50	15.80	22.10	365.90	83
120.00	12	17.00	65	24.50	60.00	7.25	90.40	15.00	84
225.00	110	200.00	200	50.00	310.50	106.00	10.25	77.00	85
202.00	84	302.00	150	55.50	94.75	100.50	227.00	71.70	86
44.60	-----	----------	30	20.50	29.00	44.85	14.40	26.50	87
45.00	20	38.00	--------	13.50	35.50	47.50	98.00	33.25	88
223.50	39	140.00	--------	----------	257.00	37.50	48.00	63.50	89
141.00	19	61.50	49	25.80	2.00	11.25	34.75	8.75	90
115.00	18	62.00	479	203.50	202.00	78.50	192.00	104.00	91
153.00	30	152.00	--------	241.25	58.00	44.10	105.00	161.15	92
-----------	-----	----------	24	10.50	29.75	19.75	126.25	------------	93
31.00	7	24.00	57	12.50	24.75	18.25	21.75	------------	94
114.00	-----	----------	75	34.75	98.75	21.00	68.65	58.90	95
151.00	20	73.00	100	41.25	70.00	26.15	43.75	60.00	96
1,138.00	246	705.00	265	50.00	1,698.50	439.00	635.00	20.00	97
92.25	36	32.00	106	31.50	107.15	63.55	85.34	42.60	98
130.00	-----	----------	41	29.00	40.00	57.00	180.00	117.50	99
$ 17,435.45	2,897	$7,291.30	15,762	$6,678.76	$11,993.45	$6,611.62	$ 11,176.08	$ 13,122.53	
$ 14,034.45	2,783	$6,140.77	14,317	$5,397.08	$ 9,534.51	$6,307.62	$ 8,710.29	$ 12,711.43	
$ 9,972.11	2,370	$4,494.63	10,958	$4,318.53	$ 8,535.01	$4,934.35	$ 9,261.12	$ 9,647.93	

TABLE NO. IV—TOTAL ATTENDANCE, TOTAL PAID ADMISSIONS AND ADMISSION FEES CHARGED AT COUNTY AND DISTRICT FAIRS IN IOWA FOR 1916.

Number	County and City or Town	Total attendance	Total paid admissions	Outside Gate Admission			Grand stand		
				Adults	Vehicles	Children	Day admissions	Total day admiss'ns	Total night admiss'ns
1	Adair, Greenfield	9,000	8,419	50	25	25	15	1,808	------
2	Adams, Corning	6,471	6,471	35	25	20	15	2,088	4,313
3	Allamakee, Waukon	7,000	6,000	50	25	25	25	1,900	1,500
4	Audubon, Audubon	15,000	15,000	35	35	15	25	--------	------
5	Benton, Vinton	12,214	11,214	35	35	25	25	1,796	------
6	Black Hawk, Waterloo	46,762	34,580	50	25	25	----	--------	------
7	Black Hawk, Cedar Falls	32,429	25,135	50	----	25	25	20,371	7,065
8	Boone, Ogden	8,500	7,817	35	35	20	10	796	585
9	Bremer, Waverly	35,940	24,558	50	----	25	25	9,455	------
10	Buchanan, Independence	16,728	11,046	50	25	15	25	3,020	865
11	Buchanan, Aurora	--------	--------	25	25	15	----	--------	------
12	Buena Vista, Alta	11,018	10,568	50	25	25	25	1,515	------
13	Butler, Allison	10,000	9,000	35	35	25	25	--------	------
14	Calhoun, Manson	6,892	6,451	50	25	25	15	1,296	------
15	Calhoun, Rockwell City	12,500	9,789	50	----	----	25	2,487	------
16	Carroll, Carroll	7,692	6,792	35	35	----	25	1,685	------
17	Cass, Atlantic	40,000	18,500	35	35	15	25	5,555	------
18	Cedar, Tipton	13,500	10,500	35	35	15	15	3,195	------
19	Cerro Gordo, Mason City	38,983	24,558	50	----	----	25	13,726	4,300
20	Chickasaw, New Hampton	5,000	3,500	50	25	25	10	1,103	------
21	Chickasaw, Nashua	6,000	5,400	35	25	25	15	3,760	------
22	Clay, Spencer	4,500	--------	----	----	----	----	--------	------
23	Clayton, Strawberry Point	9,000	8,000	35	50	20	15	2,550	320
24	Clayton, Elkader	6,214	6,214	35	35	25	15	1,299	586
25	Clayton, National	3,032	3,032	35	50	25	15	499	------
26	Clinton, De Witt	18,000	14,000	35	35	15	25	9,000	------
27	Crawford, Arion	4,336	3,947	35	35	15	25	321	------
28	Davis, Bloomfield	24,000	--------	35	25	15	15	6,148	------
29	Des Moines, Burlington	36,414	23,284	50	25	25	25	14,179	12,010
30	Dickinson, Spirit Lake	3,239	--------	35	25	25	25	280	------
31	Fayette, West Union	21,000	11,135	35	50	35	15	1,062	546
32	Floyd, Charles City	--------	500	50	----	----	----	--------	------
33	Franklin, Hampton	8,025	7,990	50	----	25	25	1,744	290
34	Fremont, Tabor	--------	630	25	----	15	----	--------	------
35	Greene, Jefferson	12,131	10,631	35	35	20	25	3,335	------
36	Grundy, Grundy Center	10,000	8,000	35	35	20	15	1,000	------
37	Guthrie, Guthrie Center	19,760	18.641	35	35	25	----	--------	------
38	Hancock, Britt	12,000	6,500	50	35	----	25	1.616	------
39	Hardin, Eldora	15,000	12,562	35	35	15	15	4.518	------
40	Harrison, Missouri Valley	12.000	7,953	35	35	----	15	1,012	------
41	Henry, Mt. Pleasant	25,000	15.000	35	25	----	15	5.266	2.716
42	Henry, Winfield	7,300	7,036	35	25	15	15	--------	------
43	Humboldt, Humboldt	17,000	11,500	50	----	25	25	--------	------
44	Iowa, Victor	3.500	2.980	35	35	15	25	200	------
45	Iowa, Williamsburg	3.420	3,270	35	---	25	25	450	400
46	Iowa, Marengo	3,500	2.604	35	25	15	25	--------	------
47	Jackson, Maquoketa	10,000	7,421	35	25	15	25	1,667	----
48	Jasper, Newton	14,240	13,140	35	35	---	25	4.679	1.153
49	Jefferson, Fairfield	13,537	10,537	35	35	---	15	2,055	------
50	Johnson, Iowa City	7,500	6,819	50	50	25	25	3,084	----
51	Jones, Monticello	12,590	11,673	35	25	15	15	4,382	2.174
52	Jones, Anamosa	5,850	5.084	50	25	15	15	5,179	-----
53	Keokuk, What Cheer	8,292	8,292	35	25	25	25	2,046	------
54	Kossuth, Algona	25,000	17,220	50	25	25	25	3,294	1.673
55	Lee, West Point	3,000	--------	50	25	----	----	--------	------
56	Lee, Donnellson	7,000	6,500	35	25	15	----	--------	------
57	Linn, Central City	12,000	11,000	35	25	15	15	4.423	1,911
58	Linn, Marion	16.480	16.000	35	25	15	15	5,300	1,800
59	Louisa, Columbus Junction	9,000	8,772	50	25	25	15	2,853	1.524
60	Louisa, Morning Sun	--------	--------	---	----	----	----	--------	------

TABLE NO. IV—CONTINUED.

Number	County and City or Town	Total attendance	Total paid admissions	Outside Gate Admission: Adults	Outside Gate Admission: Vehicles	Outside Gate Admission: Children	Grand stand: Day admissions	Grand stand: Total day admiss'ns	Grand stand: Total night admiss'ns
61	Lucas, Derby		1,350						
62	Lyon, Rock Rapids	21,616	21,616	35	25	25	25	13,780	
63	Mahaska, New Sharon	4,500	4,276	35	25	20	25	1,541	
64	Mahaska, Oskaloosa	21,171	19,511	50	25	25	25	6,925	1,599
65	Marion, Pella	6,000	4,100	25	25	15	25	6,000	
66	Marshall, Rhodes	[illegible]	1,545	35	25	20			
67	Marshall, Marshalltown	32,492	32,492	50	25	25	25	4,921	3,902
68	Mills, Malvern	5,000	3,360	35	25	25	25	1,486	
69	Mitchell, Osage	6,422	6,262	35		25	15	1,145	714
70	Monona, Onawa	4,864	4,693	35			25	2,344	
71	Monroe, Albia	22,000	17,570	35	25	15	15	4,230	
72	Muscatine, West Liberty	17,100	15,491	35	35		20	4,235	3,133
73	Muscatine, Wilton	8,000	4,466	35	35	20	15	[illegible]	
74	O'Brien, Sutherland	14,240	11,980	50	25	25	25	990	1,000
75	O'Brien, Sheldon	15,000	13,866	50		25	25	1,790	2,500
76	Page, Shenandoah	20,000	13,757	50	25	25	25	1,534	
77	Page, Clarinda	18,500	18,500	50	25	25	25	1,295	1,000
78	Pocahontas, Fonda	[illegible]	[illegible]	50	25	25	25	1,300	
79	Pottawattamie, Avoca	7,000	5,353	35	35	20	25	1,426	
80	Poweshiek, Malcom	5,000	[illegible]	35	25	25	25	1,486	
81	Poweshiek, Grinnell	[illegible]	11,665	35			25	3,620	3,000
82	Sac, Sac City	17,000	15,900	50	25	25	25	3,484	
83	Shelby, Harlan	25,000	12,725	35	35	20	25	4,359	
84	Sioux, Orange City	3,819	3,819	50	50	25	25	534	
85	Story, Ames	6,053	4,653	35	25	15			
86	Tama, Toledo	10,000	10,000	50	25	25	25	[illegible]	500
87	Taylor, Bedford	7,329	7,329	50	25	15	15	1,100	400
88	Van Buren, Milton	5,750	[illegible]	35			10		
89	Wapello, Ottumwa	2,000	849	15					
90	Wapello, Eldon	[illegible]	6,925	50	25	15	10	1,462	458
91	Warren, Indianola	[illegible]	23,000	35	25	15	25	6,000	
92	Wayne, Corydon	30,000	16,042	35	25		25	5,505	
93	Wayne, Sewal	12,000					15		
94	Wayne, Clio	[illegible]							
95	Winnebago, Forest City	5,000	[illegible]	50			25	2,109	[illegible]
96	Winneshiek, Decorah	16,500	15,000	50		15	25	2,722	1,040
97	Woodbury, Sioux City	68,643	56,765	50		25	25	15,504	
98	Worth, Northwood	5,000	4,238	35	25		15	870	
99	Wright, Clarion	9,250	8,137	50	25	25	15	1,620	
	Totals	1,272,479	991,057					279,714	66,600
	Totals for 1915	1,115,605	838,047						
	Totals for 1914	1,003,271	[illegible]						

Admission Fees Paid	50 Cents	35 Cents	25 Cents	20 Cents	15 Cents	10 Cents	No Chge.
General admission, outside gates:							
Adults	37	53	3		1		5
Vehicles	5	23	18				23
Children		1	39	10	26		23
Grand stand admissions			52	1	28	4	14
Quarter stretch admissions:							
Persons			60	1	14	5	50
Vehicles			18	1	4	1	75

FARMERS' INSTITUTES.

There were ninety-two farmers' institutes held in the State of Iowa during the fiscal year ending June 30, 1916. There were sixty held in sixty-seven different counties and had a total attendance of 115,700.

The state aid paid these institutes through the Department of Agriculture amounted to $4,852.53. In addition to this there was raised by the local institutes by subscription, memberships, etc., $17,616, making the total receipts with balances on hand $28,782.49.

The total expense of conducting these institutes was $22,719.32. The principal items of expense were: for speakers and judges, $3,963.83; cash premiums on live stock, agricultural products and the products of domestic science, $10,855.75, and miscellaneous expense, $7,899.74.

The tabulation attached to and made a part of this report gives the detailed information for each institute.

SHORT COURSES.

Our present law making appropriation to short course associations provides in counties where no county or district fair is held they may draw $200 from the fair funds and in counties where no farmers' institutes are held the institute fund may be diverted to the short course. For this reason there are a number of short courses held each year that receive no state aid and from which the department receives no report.

Sixteen short courses received state aid during the fiscal year ending June 30, in the sum of $1,772.03. Four drew the aid due county fairs, seven the aid due farmers' institutes and five drew both.

The total attendance of these short courses was 26,820. The total receipts including state aid was $11,581.18 and the total expense of conducting them was $10,006.72.

THE IOWA STATE FAIR AND EXPOSITION.

Following two unfavorable seasons as far as weather and conditions favorable to a large attendance were concerned the Iowa State Fair was more fortunate this year, and with the exception of Thursday afternoon and Friday forenoon of the last week when we had a drizzling rain, the weather was all that could be wished for. On account of the favorable season the farmers had their threshing and stacking well out of the way and were in a good position to attend the fair, and the attendance record would indicate they turned out in good numbers.

The total attendance for the week was 291,972, surpassing all previous records by 11,500 and the 1915 attendance by about 47,000. Had it not rained the last two days I fear this year's attendance record would have been so large it would have been difficult to equal another year.

An attempt was made to determine what per cent of the attendance came to the fair by automobile. This, however, is a difficult matter because so many people coming from the smaller towns and country districts by auto secure a room and a garage for their auto down town and do not use it for conveyance between the city and fair grounds on account of the congestion of autos on the streets leading to the grounds. There were also hundreds of cars parked on vacant lots just outside the Grand Avenue entrance. The admission department kept a record of all autos passing through the gates and also made a careful estimate of those that remained in the camp grounds overnight. These figures show there were 25,307 autos that either came through the gate or remained in the camp grounds. Taking these figures and an estimate of the cars that were kept down town and parked outside the entrance, it is safe to say one-half the attendance reached the fair by automobile.

Going a little farther I secured figures from one of the leading railroads showing the territory from which their business originated. We found only 2 per cent of their business originated within a radius of 20 miles of Des Moines; 23 per cent within 40 miles; 53 per cent within 60 miles and 47 per cent of all their business originated from outside a radius of 60 miles. In other words the railroads secured 2 per cent of their business within a radius of 20 miles of Des Moines; 21 per cent between 20 and 40 miles, 30 per cent between 40 and 60 miles and 47 per cent from outside a radius of 60 miles. An analysis of these figures would indicate the auto is the favorite conveyance up to about 40 or 50 miles but outside of that radius the railroads are on equal footing with the autos. I also found by personal investigation that people do not enjoy the long auto rides, but where they can go and come the same day the auto is preferable.

Referring to the exhibits the Breeders' Gazette hit the nail on the head when it said, "It was overflow week at the Iowa State

Fair." It seemed each and every department was filled to its capacity and some of them away beyond their capacity.

It is not my intention to review the exhibits in each department but I feel I should refer to some of the outstanding features and a few of the difficulties the management had in housing the exhibits with the present accommodations. This year we had 127 exhibitors in the horse department and they entered 972 head of horses, ponies and mules, and actually showed 767 head. In 1915 we had 923 head entered and 684 shown. You will note there were about 200 less horses shown than were entered each year. The facts are our present horse barns, some of which are not desirable and poorly located, will only accommodate about 800 head of horses. The result is after the entries are in and stalls have been assigned there are about 175 head that are left without stalls assigned. The exhibitors have learned unless they receive their stall assignment a week or ten days prior to the fair the chances are they will be obliged to go in tents, so they do not show up. This not only creates dissatisfaction among the breeders and exhibitors but it is very embarrassing for the management. It is unfair to invite the breeders to exhibit their fine horses and then not be in a position to furnish them satisfactory quarters in which to stable them.

In the cattle department there were 120 exhibitors who entered 1,350 head and showed 1,203. This is a new record for the Iowa State Fair and one that we do not believe has ever been equaled by any show in America. There were 322 head of Shorthorns on the grounds, which is a record Shorthorn show for this country. There were 59 head of senior bull calves shown in one ring, which is also a record ring for the United States.

The cattle show was well balanced. All breeds being well represented by the finest types of the respective breeds. There were 787 head of beef and 416 head of dairy cattle on exhibition.

The accommodations for cattle are even more deplorable than those for the horses. There are stalls for about 300 head of cattle in the permanent barns, which form a part of the proposed cattle barn, that are very good. There are also stalls for about 650 head in the old frame cattle barns which are in bad condition and not easily reached by the public. The balance of about 250 head we were obliged to stall in the old sheep sheds, which were condemned two years ago as not being fit for sheep, and in three tents in which temporary stalls were built during the opening days of the fair. All Iowa should be proud of the distinguished position the Iowa State

Fair occupies among the live stock shows of America, but we can not hope to retain this position unless better barns are provided for the horse and cattle exhibits.

An added feature of the cattle show this year, was the cow testing demonstration which was explained to you in detail by Professor Barker. This exhibit received considerable favorable comment and has a real educational value. It puts the proposition and the advisability of testing cows up to a farmer in such a manner that he is sure to take ideas home with him.

The swine show filled practically every pen in the mammoth pavilion. There were 166 exhibitors who showed 2,356 head of swine. The show was pronounced the best in years from the standpoint of quality.

The sheep show was made by 29 exhibitors who showed 605 head of sheep. The number shown was a trifle less than last year, which is accounted for by the extremely warm weather during the latter part of July and the fore part of August, which made it difficult to fit sheep for show purposes.

New features of the sheep show were the classification for fleeces and the sheep-shearing contest. The latter created considerable interest and promises to have a number of contestants if continued another year.

The poultry show made a wonderful gain, increasing from 1,578 birds in 1915 to 2,458 this year. The show was made by 133 exhibitors, which was also an increase of 14 over 1915.

The Agricultural Building reflected more clearly the possibilities of agriculture in Iowa and the excellence of her farm, garden and orchard products. In addition to the 12 county and 21 individual farm exhibits which were an exposition of agriculture in themselves, there was an excellent showing of both agricultural products and fruit by individual exhibitors.

The predominating feature of the agricultural exhibit, however, was the ''Horn of Plenty'' which won the grand prize for collective agricultural exhibits and placed Iowa on the map at the P. P. I. E. This was reproduced in every detail under a contract with Fred Hethershaw, who was assisted by Victor Felter, both of whom were employed by the commission to build the exhibit at San Francisco. The State Board of Agriculture had the hearty co-operation of the Iowa P. P. I. E. Commission in reproducing this exhibit. A greater portion of the original exhibits and all the show cases, draperies carpets, fixtures, etc., were turned over to the board by the commission, thus making it a genuine reproduction.

There are many other exhibits which deserve favorable mention, but these will all be taken care of in the complete report of the fair published in the year book.

RECEIPTS AND DISBURSEMENTS OF THE FAIR.

The total receipts of the 1916 fair were $201,381.96. This is an increase of $35,777.56 over 1915 and exceeds the receipts of any previous fair by $12,549.86. There was an increase of $27,705.50 in ticket sales and $8,072.06 from sources other than ticket sales. The latter is due to increased receipts in the concession and machinery departments and increased receipts for stall and pen rent in the live stock departments.

The total expenditure on account of fair amounted to $169,197.86. This was a reduction in cost from the 1915 fair of $1,962.23. The cash premiums paid amounted to $67,060.41, a decrease of $2,538.34 and the expense other than premiums amounted to $102,137.45, an increase of $576.07.

The itemized statements set forth in detail the receipts and disbursements of the department and the state fair for the fiscal year ending November 30, 1916. The profit on the 1916 fair was $32,184.10. The interest-bearing indebtedness which amounted to $40,000 on December 1, 1915, was reduced to $20,000 on November 30, 1916. Cash balance on hand $3,998.17 and the net indebtedness $16,001.3.

ITEMIZED STATEMENT OF RECEIPTS AND DISBURSEMENTS OF THE IOWA DEPARTMENT OF AGRICULTURE AND THE IOWA STATE FAIR AND EXPOSITION FOR THE FISCAL YEAR ENDING NOV. 30, 1916.

Cash balance December 1, 1915			$ 100.63
Receipts from sources other than State Fair:			
Fees, stallion registration division		$ 9,961.00	
State appropriation sewer system		5,733.27	
State appropriation support Dept. of Agriculture		2,400.00	
State appropriation insurance on buildings		1,000.00	
Stall rent speed barns		540.75	
Pasture rent		187.65	
Use of barns for horse and cattle sales		200.00	
Stall rent draft horse barns		60.00	
Blacksmith outfit sold		25.00	
Running gear to light wagon sold		15.00	
Use of grounds for conventions (expense only)		23.00	
Rent for Wilkins' house		37.00	
Kindling sold		10.50	
Old lumber sold		9.45	
Insurance on glass, loan art exhibit		5.50	
Junk, old iron sold		27.25	
Sale of forage left over from 1915 fair		53.31	
Miscellaneous collections by supt. of grounds		19.00	
Rent for poultry cooping		150.00	
Sheep and wool sold		3,014.54	
Material sold to sewer contractor		48.90	
Received for one-half interest in two sulkies		69.91	
Received for copy report of fair managers' meeting		14.00	
Refund overpayment expense bill		10.00	
Refund, overpayment of premiums, 1915		25.00	
Received for list of stallion owners		20.00	
Received for 35 cement sacks		3.50	
Received for old half tones and electros		12.00	
Received for water furnished game farm		84.58	
Received for 51 old police hats		12.75	
Received from Minnesota state fair for one-half repairs to sulky		7.50	
Conscience money—six admissions		3.00	
Bills payable		22,000.00	
Total receipts other than fair			45,783.36
Receipts of 1916 Fair:			
Stall rent horse department		$ 1,708.00	
Stall rent cattle department		1,545.00	
Pen rent swine department		1,101.00	
Pen rent sheep department		170.00	
Coop rent poultry department		533.00	
Concessions poultry building		140.00	
Machinery Department:			
Floor space Machinery Hall	$ 3,116.25		
Floor space Power Hall	561.00		
Floor space auto show room	2,204.21		
Outside space	117.00		
Rent from plowing demonstration ground	183.00	6,181.46	
Concessions agricultural building		1,035.00	
Dairy department ice cream sales		2,041.20	
Concessions and space exposition building		2,770.00	
Concessions and Privilege Department:			
Concessions and privileges	$ 18,202.46		
C. A. Wortham Shows (per cent)	3,832.73		
Grand stand concession (per cent)	1,470.45		
Score card privilege (per cent)	343.91		
Giant coaster (per cent)	965.43		
Camp Dodge, picture show (per cent)	102.85		
Gebhard's Mechanical Clock (per cent)	97.02		
Delivery and baggage permits	402.00		
		25,416.85	

Light and power sold		307.98	
Collections from telephone exchange		388.81	
Speed department, entry fees		2,036.98	
Western Breeders' futurity fund		717.78	
Iowa State Fair futurity fund		1,057.30	
Sale of forage		9,360.20	
Association special premiums		4,680.65	
Entry fees National Draft Horse futurities		807.00	
Advertising in Baby Health book		196.00	
Advertising in premium list		1,016.50	
Corn from Horn of Plenty		9.00	
Entry fees Ford auto races		20.00	
Refund superintendent of admissions pay roll		2.50	
Total receipts of fair other than ticket sales		$ 63,242.21	
Ticket Sales:			
Exhibitor's tickets sold by sec'y	$ 3,326.00		
Outside gates	89,323.50		
Day amphitheater	21,715.50		
Night amphitheater	20,661.25		
Night stock pavilion show	3,113.50		
Total ticket sales		138,139.75	
Total receipts of fair			$201,381.96
Grand total receipts			$247,265.95

DISBURSEMENTS.

Expense other than for Fair or Improvements:		
Annual meeting and state agricultural convention		$ 511.21
Drayage on poultry cooping		38.00
Expense on account 1915 State Fair:		
Advertising bills	$ 40.90	
Premiums held up and paid during 1916	94.00	
Balances on payrolls	26.26	
Fifth prize Boys' Judging Contest, 1915	25.00	
Binding 1915 award books	7.00	
Railroad fare member boys' camp	2.72	
		195.88
Bills payable 1915 issue		40,000.00
Bills payable 1916 issue		2,000.00
Interest on bills payable		2,172.16
Expense on account horse and cattle sales		198.58
Spring Stallion Show:		
Premiums paid	$ 950.00	
Judges	75.00	
Premium ribbons	64.00	
Printing	33.50	
		1,122.50
Insurance premiums		2,634.25
Office furniture and fixtures		144.35
Sheep purchased for feeding down grass on grounds:		
Purchase price plus freight	$ 3,434.52	
Sheep herder	377.75	
Care and feeding	48.00	
Shearing	23.13	
Labor fencing bldgs., flowers and shrubs	99.00	
Services, man and auto, purchasing sheep	55.00	
Salt and miscellaneous expense	7.10	
		4,044.50
Expense on loan art exhibit, 1914		5.50
Minnesota share in two sulkies		68.75
Rental and option on 17 acres ground		300.00
Minnesota and Wisconsin share in expense on speed wagons		14.86
Subscription to daily papers		10.20
City directory		7.00
Premium on secretary's bond		25.00
Dues Chamber of Commerce		15.00
Dues Des Moines Commercial Association		10.00
Binding premium lists and Greater Iowa		6.00
Legal service in rate case, 1912		115.29
Freight and drayage		8.10
Fee for registering auto truck		4.00
Blue prints New York fair ground buildings		2.50
Flowers for O. O. Smith, deceased		7.50

Picture frames		2.15	
Auto hire for visiting fair officials during year		5.50	
Stallion Registration Division:			
Salary chief clerk	$ 1,491.66		
Salary clerk and stenographer	820.00		
Salary extra clerks	670.56		
Expense appearing before grand juries	20.28		
Expense attending meeting National Ass'n Stallion Registration Boards	31.14		
Stud books	3.00		
Rent typewriter	4.00		
Miscellaneous supplies	22.12		
Printing 6,000 copies report	466.92	3,529.68	
State Publicity Department:			
Salary director seven months	$ 875.00		
Salary stenographer seven months	496.95		
Printing Greater Iowa	1,160.97		
Postage Greater Iowa	66.96		
Mailing Greater Iowa	30.27		
Drayage on Greater Iowa	5.25		
Cuts and electros	86.81		
Plates for addressograph	131.68		
Newspaper clippings	24.00		
Newspaper directory	5.00		
Paste and supplies	8.52	2,891.41	
Total expense other than fair or improvements			$ 60,089.87
Maintenance of Grounds and Buildings:			
Superintendent and assistants		$ 751.75	
Mule team, feed, shoeing, etc		149.65	
Water system, repairs		70.73	
Horse barn No. 7, repairs		17.00	
Speed barn, repairs		24.98	
Light system, repairs		12.55	
Farm house, papering and painting		19.12	
Wilkins' house, papering		17.16	
Work on race track		411.50	
Cleaning grounds and buildings		61.50	
Tools and implement, repairs		89.88	
Agricultural building repairs		42.35	
Hauling manure from speed barns		171.50	
Women and Children's bldg., painting porch rail		14.00	
Streets, dragging, grading, etc		92.62	
Mowing grass		97.73	
Brick horse barn, repairing gutters		56.22	
Grading and filling		42.00	
Stock Pavilion, repairing gutters		26.10	
Water, except during July, August and September		93.36	
Watchman		72.50	
Cattle barn, repairing gutters		28.75	
Lawn seat repairs		22.25	
Sheep barn, painting pens		63.33	
Brick dining hall repairs		87.10	
Amphitheater, repairs		69.40	
Fence repairs		5.75	
Ticket booths, painting		7.50	
Dining hall tables, Administration building		2.25	
Toilets, miscellaneous repairs		64.05	
Locksmith, making keys, etc		24.50	
Turnstiles, repairs		17.50	
Office building, repairs		6.00	
Band stand, painting		6.00	
Exposition building, repairs		37.30	
Telephone exchange, repairs		20.95	
Swine pavilion, repairs		5.50	
Paint and painting, miscellaneous buildings		117.71	
Cooling out paddock, repairs		2.05	
Motor truck, gasoline, oil, etc		15.30	
Glass for miscellaneous building and show cases		116.64	
Lumber for general repairs		187.18	
Hardware for general repairs		95.06	
Miscellaneous labor on repair work		74.75	
Miscellaneous maintenance and repairs		21.75	
Total maintenance grounds and buildings			3,432.77

Improvements:

Speed barn No. 2, office		$ 16.00	
Trees, shrubs and planting		219.99	
Grading around new sheep barn		14.00	
Sheep barn, toilet partitions		13.19	
Agricultural building, county and farm exhibit booths		359.76	
Fencing around farm house		21.12	
Dining hall purchased from W. & C. Hospital Ass'n.		100.00	
Auto parking posts and painting		52.65	
Work shop, partition new		5.50	
Dining hall tables, Administration building		15.00	
Race track fence		11.00	
Women's and Children's bldg., furnishings, etc.		271.89	
Fencing for buildings		158.10	
Real estate, payment on lot 1		300.00	
Light system, extensions		507.12	
Electric light lamps and globes		339.74	
Brick dining hall, chimney		4.50	
Amphitheater, balance on windows, south side		12.69	
Pumps at speed barns		21.50	
Lumber from temporary buildings taken to yard		303.45	
Brick horse barn, harness hooks		8.25	
Poultry building, flock pens		11.98	
Motor truck		1,095.25	
Streets, cinders and permanent grading		325.50	
Curbing, street to W. & C. building		33.30	
Tools and implements		62.50	

Fair Grounds Equipment:

Sulky, speed department	$ 68.75		
Feed troughs for sheep	7.68		
Ticket boxes, treasurer's department	18.00		
Garden hose	9.00		
Exhaust fan for Administration building dining hall	14.50		
Cash drawer	1.75		
Cots, mattresses, etc.	67.10		
Coffee urn and dishes, club dining hall	36.10		
Furniture, Administration building	36.49		
Grips for ticket sellers	16.80		
Six salamanders	24.00		
Bells for sheep	4.10		
Miscellaneous equipment	106.05		
		410.32	

Sewer System:

Balance on contract	$ 3,875.07		
Balance engineer's fees	69.80		
Inspector	299.15		
Making connections with toilets	220.23		
Sewer pipe for connections	71.61		
Cement for connections	22.80		
Cover for manhole, horse barn toilet	7.00		
Hemp for corking joints	1.00		
Contract for storm sewers	1,157.00		
Filling over storm sewer	129.32		
		5,852.98	
Total improvements			10,547.28

Expense of 1916 Fair:

Payroll, Public Safety department		$ 4.346.39	
Payroll, Admissions department		2.812.00	
Payroll, Treasurer's department		1,512.00	
Payroll, Concession department		1,738.50	
Payroll, Speed department		710.50	
Payroll, Horse department		1,585.00	
Payroll, Cattle department		1,312.75	
Payroll, Swine department		572.20	
Payroll, Sheep department		386.00	
Payroll, Poultry department		433.81	
Payroll, Machinery department		697.30	
Payroll, Agricultural department		634.15	
Payroll, Horticultural department		248.80	
Payroll, Floricultural department		119.00	
Payroll, Ice Cream Dairy department		1,143.95	
Payroll, Textile and China department		419.20	
Payroll, Educational and Boys' and Girls' Club department		588.80	

Payroll, Ticket Auditing department	355.00
Payroll, Graphic and Plastic Arts department	179.34
Payroll, Press and Awards department	100.00
Payroll, Boys' Judging contest	57.40
Payroll, property men, amphitheater show	183.15
Payroll, janitors, Administration building	237.50
Payroll, Gen'l Supt. and matron W. & C. building	83.00
Payroll, Child's Welfare department	44.00
Payroll and expense, Baby Health department	631.65
Expense moving picture program auditorium, Women & Children's building	186.50
Expense Rural School department	45.42
Payroll, janitors, W. & C. building	270.00
Expense reproducing Horn of Plenty	2,734.31
Expense Boys' State Fair camp	1,509.98
Salaries, secretary and assistants	7,167.19
Soliciting advertising Baby Health book	48.75
Executive committee meetings	815.50
Special committee meetings	982.46
Express, telegraph and telephone	274.27
Postage	1,379.00

Printing:

16,000	Boys' camp circulars	66.00
500	Ground order blanks	3.75
750	Statement of account	2.75
2,000	School exhibit tags	11.50
6,000	Addressing slips	7.00
4,000	School premium lists	49.50
5,000	Boys' judging contest circulars	22.00
10,500	Entry blanks, all departments	43.50
2	Entry books	21.00
600	Wool exhibit and sheep shearing contest circulars	2.75
750	Advance sheets, Machinery department	3.50
750	Applications outside machinery space	8.00
500	Blanks, newspaper advertising rates	2.25
500	Special prize inserts for premium list	2.25
3,000	Speed programs	31.25
200	Placards, "No Hunting," etc.	11.85
12,000	Premium lists	907.20
	One-half cost, 12,300 race programs	52.30
500	Large daily programs	52.50
12,000	Entry blanks and circulars draft horse futurity	50.50
500	Classification Graphic and Plastic Arts department	6.40
3,000	Entry blanks and classification Baby Health dept.	20.60
300	Booklets, Iowa State Fair futurity entries	41.50
1,000	Balance sheets	8.50
500	Premium warrant receipts	1.25
1,000	Coin bag tags	2.20
400	Ticket receipts	3.65
1,000	8 page catalogs, art department	12.75
5,000	24 page catalogs, Baby Health department	135.00
1,000	Ticket and premium requisitions	4.50
1	Set poultry coop numbers	4.95
350	Receipts for Exposition department	2.50
2,000	Expense and premium warrants	21.01
	Multigraph letters	19.40
25,650	Entry tags	39.32
500	Outside gate ticket reports	11.75
1,000	Ford race circular and entry blanks	16.50
12,000	Premium list envelopes	34.41
1,500	Bill heads	14.75
4,850	Index cards	18.10
1,000	Lists of words for spelling contest	40.00
100	Receipt books	9.50
500	Shipping tags	1.75
500	Plats of buildings and grounds	4.00
500	Clasp envelopes	3.25
10	Large bound receipt books	14.50
12,600	Stall and ring numbers	105.50
1,000	Return envelopes	2.50
75	Feed barn duplicate order books	13.00
	Patching 500 letterheads	1.25
100	No parking placards	8.00
2,500	Variety cards, Horticultural department	7.00
1,000	Circulars to newspapers	5.75
500	Invitations and envelopes	10.25
10,000	Envelopes	39.55
1,000	Circulars Ford auto race	4.50
500	List entries speed department	30.00

300 Sets arm numbers, horse show	18.00	
500 Release cards, speed department	2.25	
300 Fractional numbers for show ring	2.50	
10 Receipt books speed department	6.25	
10 Order books, speed department	6.00	
750 Judging programs, horse department	14.50	
4,000 Programs model Sunday School	36.00	
9,800 Night Horse Show programs	41.90	
6,000 Premium tags	24.00	
500 Boys' and Girls' Club day badges	17.00	
500 Insurance forms	6.50	
Tickets for all gates and side shows	802.95	
		3,048.54
Advertising:		
Country weekly papers	$ 3,273.91	
Plate matter for country papers	652.35	
Daily papers outside Des Moines	401.80	
Des Moines daily papers	2,016.36	
Agricultural, live stock and breed papers	1,383.46	
Horse paper advertising speed program	610.53	
Miscellaneous papers and magazines	182.60	
Implement and machinery papers	74.00	
Superintendent Advertising, salary, 5 months	625.00	
Stenographer and clerk, salary, 5 months	450.00	
Printing 190,000 "Greater Iowa"	1,736.61	
Postage on "Greater Iowa"	136.29	
Extra help mailing "Greater Iowa"	56.70	
Arranging auto plates for mailing list "Greater Iowa"	170.66	
6,000 hangers and mailing tubes	747.50	
350 window cards	84.00	
Billboard service	687.60	
Billboard paper, dates, banners, etc	284.90	
Distributing advertising matter	41.00	
Cuts and electros	153.47	
14,000 post cards, dates	37.70	
Photos, 1915-1916 fairs and stallion show	276.70	
Clipping service	48.00	
50,000 date stickers	50.90	
Expense representative on trade excursion trip	32.50	
Advertising in Western Breeders' sale catalog	25.00	
Posters for state fair moving pictures	14.00	
6,000 Sunday music programs	20.50	
10,000 dodgers advertising auto races	26.85	
Newspaper contract forms	5.50	
Subscription to billboard	4.00	
		14,310.39
Office supplies, stationery, etc	493.08	
Plants and flowers	521.77	
Des Moines Day keys and expense	638.52	
Cups, medals and engraving	516.71	
Rental, tents, cots, bedding, chairs, etc	1,466.95	
Rental plowing demonstration ground	150.00	
Miscellaneous signs for buildings and exhibits	408.45	
Expense on booth for Gebhards' clock	8.50	
Coal and firemen for dining halls	153.91	
Tan bark for stock pavilion	161.99	
Typewriter rental	5.50	
Freight and drayage	204.57	
Feed for poultry	52.50	
Ground supplies	415.69	
Oiling and dragging streets	553.32	
Expense on account Sunday school	38.40	
Auto show annex building and wrecking	113.38	
Premium ribbons, badges, etc	1,153.30	
Water system, temporary extensions, etc	225.80	
Washing dishes, Horticultural department	24.00	
Closing buildings after fair	70.00	
Watchman before and after fair	102.50	
Fencing buildings and flower beds	41.00	
Placing and removing amphitheater chairs	47.75	
Meals for guests, and State day guests	191.06	
Mechanic for turnstiles	74.00	
Ringmen stock pavilion	46.10	
Annual dues American Trotting Association	100.00	
Miscellaneous labor August 21st to September 2d	943.33	
Miscellaneous carpenter work, August 21-September 2d	341.45	
Blacksmith for repair work	43.50	
Auto for horse judges	44.00	
Dues American Association of Fairs	35.00	
Uniforms for property and ring men	21.10	
Gasoline for autos and camp ground lights	83.40	

Depreciation on lumber used in temporary buildings		33.72	
Repairs to sulky and speed wagons		22.44	
Photos "Horn of Plenty"		8.00	
Repairing outside fence		12.00	
Putting up "No Parking" signs		6.00	
Use of saddle horse, Superintendent of Grounds		5.00	
Rental three pianos		28.00	
Miscellaneous expense		9.00	
Auto races, prizes and bonus		3,464.50	
Music and Attractions:			
Night show, grand stand	$ 6,611.12		
Liberati's Band and Grand Opera company, 40 pieces	2,800.00		
Henry and His Band, 35 pieces	1,420.00		
Fischer's Burlington Band, 25 pieces	1,100.00		
Royal Kealakai Hawaiians, 8 pieces	468.96		
Graham's orchestra, 5 pieces	146.00		
National Drum Corps, 25 pieces	300.00		
Knoxville Ladies' Band, 25 pieces for 2 days	150.00		
Dickson's Mule derby	333.00		
Reckless Vernon baby racing cars	400.00		
Otto W. Timm, aviator	175.00		
Two sets fireworks for Timm	50.00		
Ruth Law, aviatrix	1,750.00		
Expense illuminating starting field for Law	82.00		
Seven vaudeville acts	4,500.00		
Babe King, pacing pony	50.00		
		20,336.08	
Light and power, current		818.99	
Light and power, labor installing and cable		699.62	
Water, July, August and September		541.49	
Refunds:			
Stall rent, horse department	$ 205.00		
Stall rent, cattle department	82.50		
Pen rent, swine department	15.00		
Coop rent, poultry department	2.75		
Entry fee, speed department	24.00		
Exhibitor's tickets	12.00		
Grand stand and general admission tickets	21.00		
		362.25	
Forage purchased		8,099.33	
Board meetings, per diem and mileage		361.00	
Assistants and foreman		579.25	
Sanitary Department:			
Scavenger work	$ 275.00		
Removing manure from all barns	400.00		
Toilet attendants	394.12		
		1,069.12	
Work on race track during fair		71.25	
Cleaning and preparation of grounds		424.62	
Cleaning and preparation of buildings		947.56	
Decorating all buildings		784.00	
Expense of fair other than premiums			$102,137.45

CASH PREMIUMS PAID.

Horses	$ 14,412.00	
Cattle	15,176.00	
Swine	4,570.00	
Sheep	3,757.00	
Poultry	1,408.00	
Agricultural products	6,803.00	
Pantry and kitchen products	707.50	
Honey and bees	191.00	
Dairy	952.00	
Horticulture	1,905.00	
Plants and flowers	1,447.40	
Textiles, china, etc.	1,114.50	
Graphic and plastic arts	662.00	
Educational and boys' and girls' club work	1,288.00	
State spelling contest	100.00	
Scholarships, Boys' judging contest	421.84	
Speed premiums	12,145.17	
Total premiums paid		67,060.41
Total expense of fair		$169,197.86
Grand total disbursements		$243,267.78

SUMMARY OF RECEIPTS AND DISBURSEMENTS AND RECONCILIATION OF ACCOUNTS WITH TREASURER.

Receipts:			
Cash balance, December 1, 1915			$ 100.63
Receipts from sources other than fair			45,783.36
Receipts of fair other than ticket sales		$ 63,242.21	
Receipts of fair from ticket sales		138,139.75	
Total receipts of fair			201,381.96
Grand total receipts			$247,265.95
Disbursements:			
Disbursements other than fair or improvements		$ 60,089.87	
Expense of fair other than premiums	$102,137.45		
Cash premiums paid	67,060.41		
Total cost of fair		169,197.86	
Cost of permanent improvements		10,547.28	
Cost of maintenance of grounds and buildings		3,432.77	
Total disbursements			243,267.78
Balance on hand November 30, 1916			$ 3,998.17
Warrants outstanding			764.36
Cash balance in treasury Nov. 30, 1916			$ 4,762.53

REPORT OF TREASURER.

W. W. MORROW, AFTON, IOWA.

Mr. President and Gentlemen of the Convention:

In accordance with the wishes of the State Board of Agriculture, I present herewith a report of receipts and disbursements for the fiscal year ending November 30, 1916.

RECEIPTS.

Balance on hand December 1, 1915		$ 1,063.33
Received from sale of tickets and cash turnstiles as follows:		
Cash turnstiles	$ 55,734.25	
45,392 General admissions, 50c tickets	22,696.00	
5,408 General admission, 25c after 5 p. m.	1,352.00	
13,225 Children and half fare	3,306.25	
5,472 Round-up tickets, 50c	2,736.00	
1,415 Campers' tickets, $2.00 each	2,830.00	
7 Taxi-cab tickets, $5.00 each	35.00	
1,268 Des Moines day keys, 50c	634.00	
18,522 Day amphitheater (bleachers 25c)	4,630.50	
2,088 Day amphitheater (quarter stretch 25c)	522.00	
29,859 Day amphitheater (reserved seats 50c)	14,929.50	
2,178 Day amphitheater (box seats 75c)	1,633.50	
32,440 Night amphitheater (bleachers 25c)	8,110.00	
22,578 Night amphitheater (reserved seats 50c)	11,289.00	
1,683 Night amphitheater (box seats 75c)	1,262.25	
6,140 Night stock pavilion (reserved 50c)	3,070.00	
174 Night stock pavilion (standing room 25c)	43.50	
1,663 Exhibitor's tickets at $2.00 sold by secretary	3,326.00	
Total ticket sales		138,139.75
Received from Secretary and Superintendents of Departments as follows:		
Secretary's Department:		
Fees, Stallion Registration Division	$ 9,961.00	
State appropriation	9,133.27	
Bills payable	22,000.00	
Miscellaneous receipts other than fair	3,527.76	
Superintendent of Grounds	1,161.33	
Superintendent, Horse Department	1,708.00	
Superintendent, Cattle Department	1,545.00	
Superintendent, Swine Department	1,101.00	
Superintendent, Sheep Department	170.00	
Superintendent, Poultry Department, coop rent	533.00	
Superintendent, Poultry Department, concessions	140.00	
Superintendent, Machinery Department	6,181.46	
Superintendent, Agricultural Department	1,035.00	
Superintendent, Dairy Department, ice cream sales	2,041.20	
Superintendent, Exposition building	2,770.00	
Superintendent, Concessions and privileges	25,416.85	
Superintendent, Speed Department	3,812.06	

Secretary's Department:		
Light and power	307.98	
Sale of forage	9,360.20	
Association special premiums	5,487.65	
Advertising in premium list	1,212.50	
Miscellaneous collections	420.31	
Total receipts other than ticket sales		109,025.57
Grand total receipts		$248,228.65

DISBURSEMENTS.

Expense warrants paid	$176,143.60	
Premium warrants paid	67,322.52	
Total disbursements	$243,466.12	
Balance on hand November 30, 1916	4,762.53	
To balance		$248,228.65

Respectfully submitted this 13th day of December, 1916.

W. W. MORROW, Treasurer.

December 1, 1916.

To the Directors of the State Board of Agriculture.

Gentlemen: This is to certify that there was on deposit in the Central State Bank, on November 30, 1916, to the credit of W. W. Morrow, Treasurer of the Iowa Department of Agriculture, the sum of Four Thousand Seven Hundred Sixty-two Dollars and Fifty-three cents ($4,762.53).

Yours very truly,

GRANT MCPHERRIN, *Cashier.*

INVENTORY OF FAIR GROUNDS PROPERTY

Showing Original Cost or Appraised Value, Depreciation, Improvements and Value November 30, 1916.

	Total Cost of Appraised Value	Depreciation Deducted	Improvements Added	Value Nov. 30, 1916
Real estate	$ 464,444.95	$ 5,368.76		$ 459,076.19
Real estate carrying account	706.84		$ 6,988.64	7,695.48
Light and telephone system	19,522.41	2,198.89	846.86	18,170.38
Personal Property				
Administration building furnishings	4,198.69	1,301.88	50.99	2,947.80
Amphitheatre chairs	5,003.17	1,502.23		3,500.94
W. and C. building furnishings	4,023.53	392.30	157.63	3,788.86
Building fixtures (general)	5,216.86	839.93	359.76	4,736.69
Office furniture (general)	1,164.28	348.84	144.35	959.79
Tools and implements	13,234.35	2,077.73	1,524.40	12,681.02
Live stock (sheep and mule team)	1,640.00			1,640.00
Supplies, lumber, etc.	2,866.80	330.11	303.45	2,840.14
Scales	250.00	24.37		225.63
Pumps	100.00	9.75	21.50	111.75
Buildings:				
Administration building	35,977.55	3,938.23		32,039.32
Agriculture, Horticulture and Dairy building	54,887.90	8,520.56		46,367.34
Amphitheatre	100,885.50	6,506.75	12.69	94,391.44
Art hall	600.00	85.58		514.42
Auto garage	50.00	7.14		42.86
Boys' and Girls' Club building	3,098.15	266.43		2,831.72
Bleachers	6,807.48	729.91		6,077.57
Band stands	291.98	82.17		209.81

INVENTORY OF FAIR GROUNDS PROPERTY—Continued

	Total Cost of Aypraised Value	Depreciation Deducted	Improvements Added	Value Nov. 30, 1916
Barber shop	200.00	54.20		145.80
College building	6,035.90	526.09		5,509.81
Cattle barn No. 1	4,874.85	683.90		4,190.95
Cattle barn No. 2	5,711.90	573.47		5,138.43
Cattle barn No. 3	3,281.76	1,115.84		2,165.92
Cattle barn No. 4	5,893.80	175.48		5,718.32
Cattle barn No. 5	700.00	61.13		638.87
Cattle barn No. 6	700.00	61.13		638.87
Cattle barn No. 7	700.00	61.13		638.87
Cattle barn No. 8	700.00	61.13		638.87
Cattle barn No. 9	700.00	61.13		638.87
Cattle barn No. 10	700.00	61.13		638.87
Cattle barn No. 11	700.00	61.13		638.87
Cattle barn No. 12	700.00	61.13		638.87
Cattle barn No. 13	700.00	61.13		638.87
Cattle barn No. 14	700.00	61.13		638.87
Cattle barn No. 15	700.00	61.13		638.87
Cattle barn No. 16	700.00	61.13		638.87
Cattle barn No. 17	350.00	49.92		300.08
Cattle barn No. 18	350.00	49.92		300.08
Cattle barn No. 19	350.00	49.92		300.08
Cattle barn No. 20	300.00	81.30		218.70
Cattle barn No. 21	300.00	81.30		218.70
Cattle barn No. 22	400.52	100.40		300.12
Cattle barn, wash stands, etc.	65.00	17.62		47.38
Closet No. 1	300.00	34.58		265.42
Closet No. 2	300.00	34.58		265.42
Closet No. 3	3,000.00	345.79		2,654.21
Closet No. 4	100.00	14.26		85.74
Closet No. 5	3,000.00	345.79		2,654,21
Closet No. 6	200.00	28.52		171.48
Closet No. 8	3,000.00	345.79		2,654,21
Closet No. 9	200.00	28.52		171.48
Closet No. 10	200.00	28.52		171.48
Closet No. 11	125.00	17.83		107.17
Closet No. 12	150.00	21.40		128.60
Closet No. 13	200.00	28.52		171.48
Closet No. 14	300.00	42.79		257.21
Closet No. 15	200.00	28.52		171.48
Closet No. 16	200.00	28.52		171.48
Closet No. 17	50.00	13.55		36.45
Closet No. 18	15.00	4.06		10.94
Closet No. 19	50.00	13.55		36.45
Closet No. 20	75.00	20.33		54.67
Closet No. 21	66.47	3.32		63.15
Dining halls (4 brick)	9,942.70	1,802.45	4.50	8,144.75
Dining hall on Grand avenue	6,887.00	597.81		6,289.19
Dining hall west of track	175.00	24.96		150.04
Exposition building	15,563.15	1,773.11		13,790.04
Farm house	3,964.40	449.46		3,514.94
Farm barn	1,500.00	172.90		1,327.10
Floral hall	3,031.84	816.18		2,215.66
Forage barn	2,102.69	209.09		1,893.60
Forage barn, camp grounds	100.00	14.26		85.74
Fire station	624.99	54.58		570.41
Game farm cottage	852.93	98.31		754.62
Grocery store	500.00	71.31		428.69
Grand Avenue entrance	1,591.35	197.86		1,393.49
Horse barn, brick	54,009.30	4,524.13	8.25	49,493.42
Horse barn No. 1	2,000.00	174.65		1,825.35
Horse barn No. 2	1,500.00	130.99		1,369.01
Horse barn No. 3	2,000.00	174.65		1,825.35
Horse barn No. 4	1,800.00	157.19		1,642.81
Horse barn No. 5	1,800.00	157.19		1,642.81
Horse barn No. 6	1,700.00	148.46		1,551.54
Horse barn No. 7	1,279.95	28.70		1,251.25
Hospital	800.00	69.86		730.14
Ice house	350.00	49.92		300.08

	Total Cost or Appraised Value	Depreciation Deducted	Improvements Added	Value Nov. 30, 1916
Judges' stand	267.10	15.63	------------	251.47
Judges' stand, show ring	20.00	3.80	------------	16.20
Lumber shed	400.00	57.05	------------	342.95
Machinery hall	83,950.58	6,026.97	------------	77,923.61
Meat market	280.42	72.10	------------	208.32
Mines and Mining building	489.94	28.90	------------	461.04
Office building No. 1	100.00	14.26	------------	85.74
Office building No. 2	350.00	40.34	16.00	325.66
Office building No. 3	200.00	28.53	------------	171.47
Office building No. 4	100.00	14.26	------------	85.74
Office building No. 5	100.00	14.26	------------	85.74
Office building No. 6	250.00	35.66	------------	214.34
Office building No. 7	250.00	35.66	------------	214.34
Office building No. 8	300.00	42.79	------------	257.21
Office building No. 9	100.00	14.26	------------	85.74
Office building No. 10	300.00	42.79	------------	257.21
Office building No. 11	150.00	21.40	------------	128.60
Office building No. 12	211.25	29.09	------------	182.16
Office building No. 13	350.00	40.34	------------	309.66
Office building No. 14	263.95	36.36	------------	227.59
Office building No. 15	40.00	5.70	------------	34.30
Office building No. 16	166.47	17.59	------------	148.88
Poultry building	6,109.13	698.85	11.98	5,422.26
Power hall	4,473.57	478.94	------------	3,994.63
Postoffice	374.45	42.32	------------	332.13
Police headquarters	500.00	71.31	------------	428.69
Police barn No. 1	50.00	13.55	------------	36.45
Police barn No. 2	100.00	27.10	------------	72.90
Paddock	9,885.68	580.64	------------	9,305.04
Rock Island entrance	322.28	34.40	------------	287.88
Swine pavilion	84,345.50	10,593.85	------------	73,751.65
Stock pavilion	46,207.36	8,654.54	------------	37,552.82
Street car station	8,350.12	313.46	------------	8,036.66
Speed barn No. 1	1,200.00	104.79	------------	1,095.21
Speed barn No. 2	1,200.00	104.79	------------	1,095.21
Speed barn No. 3	1,200.00	104.79	------------	1,095.21
Speed barn No. 4	1,200.00	104.79	------------	1,095.21
Speed barn No. 5	1,200.00	104.79	------------	1,095.21
Speed barn No. 6	1,200.00	104.79	------------	1,095.21
Speed barn No. 7	1,200.00	104.79	------------	1,095.21
Speed barn No. 8	1,000.00	87.33	------------	912.67
Speed barn No. 9	1,000.00	87.33	------------	912.67
Speed barn No. 10	1,000.00	87.33	------------	912.67
Speed barn No. 11	700.00	80.68	------------	619.32
Speed barn No. 12	650.00	74.92	------------	575.08
Sheep barn	25,925.53	518.51	13.19	25,420.21
Telephone station	700.00	61.13	------------	638.87
Ticket booth No. 1	15.00	2.13	------------	12.87
Ticket booth No. 2	15.00	2.13	------------	12.87
Ticket booths Nos. 4 and 5	100.00	14.26	------------	85.74
Ticket booths Nos. 6 and 7	100.00	14.26	------------	85.74
Ticket booths Nos. 8 and 9	100.00	14.26	------------	85.74
Ticket booth, Grand avenue	75.00	10.70	------------	64.30
Ticket booth, Grand avenue	25.00	3.55	------------	21.45
Ticket booth, quarter stretch	10.00	1.43	------------	8.57
Ticket booth, amphitheatre	25.00	2.88	------------	22.12
Ticket booth, amphitheatre	50.00	5.76	------------	44.24
Ticket booth, amphitheatre	35.00	4.03	------------	30.97
Ticket booth, amphitheatre	50.00	5.76	------------	44.24
Ticket booth, reserved seats	35.00	4.03	------------	30.97
Ticket booth, stock pavilion	35.00	4.03	------------	30.97
Ticket booth, Rock Island	75.00	8.64	------------	66.36
Ticket booth, Rock Island	25.00	2.88	------------	22.12
Ticket booth, amphitheatre paddock	25.00	3.55	------------	21.45
Vaudeville stages	3,012.64	1,560.50	------------	1,452.14
Women and Children's building	79,980.83	2,381.43	114.26	77,713.66
Women and Children's Hospital build'g	100.00	--		100.00
Building carrying account	573.50	15.97	29.15	586.68
Total	$1,260,496.24	$ 86,160.88	$ 10,667.60	$ 1,185,002.96

5

BALANCE SHEET, NOVEMBER 30, 1916.

ASSETS.

Real estate	$ 466,771.67	
Buildings	666,628.29	
Light and telephone plant	18,170.38	
Personal property	33,432.62	
		$1,185,002.96
Accounts receivable		41.50
Cash balance in treasury, Nov. 30, 1916		3,998.17
Total assets		$1,189,042.63

LIABILITIES.

Accounts payable	$ 176.87	
Bills payable	20,000.00	
State appropriation for frame buildings, 1885	50,000.00	
State appropriation for additional real estate	18,111.47	
State appropriation for permanent buildings since 1902	446,000.00	
		534,288.34
Surplus on account of increase in value of real estate and profits of fair invested in permanent improvements		654,754.29
Total liabilities		$1,189,042.63

STATE ACCOUNTANT'S REPORT.

TO THE EXECUTIVE COUNCIL OF IOWA:

The following is a report of my examination of the Iowa Department of Agriculture, for the period from December 1, 1915, to December 1, 1916.

F. H. PAUL,
Accountant.

IOWA DEPARTMENT OF AGRICULTURE.

The examination of this department covers a period from December 1, 1915, to December 1, 1916.

In checking this department the receipts for money received have been checked against the records kept in this department, the superintendents' reports of each department and the treasurer's books, which show that all cash has been fully accounted for and properly turned over to the treasurer of the Department of Agriculture.

The amount paid for and on account of the department for expense has been checked with the claims filed, approved and entered of record, the checks issued for the payment thereof returned, paid and cancelled and found to be correct.

The amount paid for premiums has been checked with the records kept in the department, the warrants issued for the payment of each premium or award granted and approved, the checks or premium warrants returned, paid and cancelled, or outstanding and find all accounted for and properly entered.

In the concession division, the records show that there was due and uncollected on contracts, for privileges granted, by the superintendent at the close of the fair, the sum of $15, this amount the superintendent was unable to collect.

All claims for expenses and awards have been approved by the board as shown by the records of the department.

The board has expended for permanent improvements and repairs, the sum of $10,547.88 during the past year.

There has been expended on the sewer system, for the grounds, during the year, the sum of $5,852.98.

The buildings on the grounds are kept insured. At the present time the fire insurance amounts to the sum of $146,500 and the tornado insurance amounts to the sum of $203,500. A statement of the insurance in force is submitted herewith.

The records and books of the treasurer and secretary showing the number and value of all tickets issued, sold and returned, has been checked and reconciled. A full accounting of the same has been made.

The total receipts from sale of tickets, for the fair of 1916, being the sum of $158,139.75. The total receipts from sale of tickets for the 1915 fair being $110,728.50.

The receipts from all sources, other than from ticket sales, amounted to $109,126.20.

The expense for the forage department, for the present year was $8,099.33. The total receipts for sales of this department for the present year amounts to the sum of $9,360.20, making a profit on forage sold the sum of $1,260.87.

The cost and expense of the ice cream division for the year was as follows:

For help	$ 162.00
Ice cream	698.50
Dishes and spoons	69.49
The total receipts being	2,041.20
Leaving a profit of	1,111.20

The department completed the inventory of the property, both real and personal and has set it out in the 1915 year book. A copy of the recapitulation or balance sheet is submitted herewith. The property was valued by appraisers and this amount with the depreciation, was shown in the year book. The inventory has not been brought forward for this year. The value of permanent improvements should be added and depreciation of property entered.

EDITOR'S NOTE—Since December 1 the inventory has been completed and that with balance sheet will be found on pages 63-66.

I have checked the records of free tickets and passes issued by officers and superintendents of the various divisions and submit a statement of the same herewith. This shows a less number issued for 1916 than for 1915.

The liabilities for 1915 were $40,211.14. The liabilities for 1916 are $20,716.74.

The appropriation of $1,000 for insurance has been drawn, by the board and used in purchasing insurance for protection of buildings on the grounds. The further appropriation of $2,400 annually has also been drawn and used by the board for expenses of the department.

The board increased the salary of the secretary from $3,000 which was paid to April 23, 1916, to that of $3,400, to be paid for the balance of the year, ending at the time of the annual meeting of the board. The board also increased the salary of Miss Smith to $100 per month and Mr. O'Brien to $125 per month. The janitor for the department is furnished by the custodian and is on his pay roll. He does the janitor work and aids in the clerical work of the office.

In the matter of expenses and premiums offered by the department I am of the opinion that the budget system should be carried out as far as possible. In some divisions this was done for this year of the fair and the expenses reduced. I would recommend that at the annual meeting of the board the budget for the 1917 fair be carefully considered and so far as possible be fixed for each division.

Some of the permanent buildings on the grounds will, in the near future, require repairs and painting that they may not depreciate more than the natural depreciation that time will bring. The legislature should make some provisions for the maintenance of the permanent buildings on the grounds at the coming meeting.

The books of one superintendent do not exactly balance with the amount turned over to the treasurer and the receipts given for cash received. I have gone over this book very carefuly and believe that all money received has been accounted for and turned over to the treasurer. The secretary states that, owing to the severe sickness of this man, he has not been able to take the matter up personally with him but will as soon as he is able and have the book balanced.

EDITOR'S NOTE—The discrepancy referred to amounts to $4.00 and this will be corrected as soon as the superintendent recovers.

The records and books of the department are in good shape. A trial balance is taken and books balanced and entered of record.

COMPARATIVE STATEMENT OF TICKET SALES AT OUTSIDE GATES, DAY AND NIGHT AMPHITHEATER AND STOCK PAVILION NIGHT SHOW FOR THE 1915 AND 1916 FAIRS.

	1916 Fair			1915 Fair		
General Admission	Price	No. sold	Total value	Price	No. sold	Total value
Outside Gates--						
General admission	$ .50	141,569	$ 70,784.50	$ .50	116,898	$ 58,449.00
Gen. admission after 5 p. m.	.25	18,011	4,502.75	.25	13,195	3,370.75
Children and half fares	.25	31,067	7,766.75	.25	21,330	5,260.50
Des Moines Day keys	.50	1,268	634.00	------	--------	-----------
Campers roundup	.50	5,472	2,736.00	.50	1,937	968.50
Campers	.40	7,075	2,830.00	.40	3,650	1,460.00
Exhibitors	.35	9,381	3,326.00	.35	9,078	3,182.00
Auto tickets—10	5.00	7	35.00	5.00	--------	50.00
Over on cash turnstiles	------	--------	34.50	------	--------	25.25
Total paid admissions	------	213,850	$ 92,649.50	------	166,068	$ 72,766.00
Day Amphitheater—						
Bleachers or paddock	$ .25	18,522	$ 4,630.50	$ .25	13,828	$ 3,457.00
Quarterstretch	.25	2,088	522.00	.25	1,474	368.50
Reserved seats	.50	29,859	14,929.50	.50	25,690	12,845.00
Reserved box seats	.75	2,178	1,633.50	.75	2,054	1,540.50
Total day amphitheater	----	52,647	$ 21,715.50	------	43,046	$ 18,211.00
Night Amphitheater—						
Bleacher or paddock	$ .25	32,440	$ 8,110.00	$ .25	23,458	$ 5,864.50
Reserved seats	.50	22,578	11,289.00	.50	20,329	10,164.50
Reserved box seats	.75	1,683	1,262.25	.75	1,578	1,183.50
Total night amphitheater	------	56,701	$ 20,661.25	---	45,365	$ 17,212.50
Stock Pavilion Night—						
Reserved seats	$ .50	6,140	3,070.00	$ .50	4,341	$ 2,170.50
Standing room	---	174	43.50	.25	289	72.25
Total stock pavilion	---	6,314	$ 3,113.50	------	4,630	$ 2,242.75

RECAPITULATION.

	1916	1915	Increase
Outside gates	$ 92,649.50	$ 72,766.00	$ 19,883.50
Day amphitheater	21,715.50	18,211.00	3,504.50
Night amphitheater	20,661.25	17,212.50	3,448.75
Stock pavilion	3,113.50	2,242.75	870.75
Total	$ 138,139.75	$ 110,432.25	$ 27,707.50

COMPARATIVE STATEMENT OF RECEIPTS, 1915 AND 1916 FAIRS.

	1916	1915	Increase	Decrease
Horse department	$ 1,708.00	$ 1,580.00	$ 128.00	
Cattle department	1,545.00	1,314.00	231.00	
Swine department	1,101.00	1,057.00	44.00	
Sheep department	170.00	142.00	28.00	
Poultry department	673.00	448.25	224.75	
Machinery department	6,181.46	5,390.58	790.88	
Agricultural department	1,035.00	1,535.00		500.00
Dairy department	2,041.20	1,717.05	324.15	
Exposition department	2,770.00	2,425.00	345.00	
Concession department	25,416.85	20,611.49	4,805.36	
Speed department	3,812.06	3,956.00		143.94
Forage department	9,360.20	9,089.26	270.94	
Ass'n special premiums	5,487.65	4,679.15	808.50	
Advertising in premium list	1,212.50	675.00	537.50	
Telephone exchange	388.81	299.17	89.64	
Light and power sold	307.98		307.98	
Ticket Sales -				
Outside gates	92,649.50	72,766.00	19,883.50	
Day amphitheater	21,715.50	18,211.00	3,504.50	
Night amphitheater	20,661.25	17,212.50	3,448.75	
Stock pavilion	3,113.50	2,242.75	870.75	
Miscellaneous receipts	31.50	253.20		221.70
Totals	$201,381.96	$165,604.40	$ 36,643.20	$ 865.64

Net increase, $35,777.56.

COMPARATIVE STATEMENT OF PREMIUMS PAID, 1915 AND 1916 FAIRS.

DEPARTMENT	1916	1915	Increase	Decrease
Horses	$ 14,412.00	$ 17,364.00		$ 2,952.00
Cattle	15,176.00	14,120.00	$ 1,056.00	
Swine	4,570.00	4,188.00	382.00	
Sheep	3,757.00	3,375.00	382.00	
Poultry	1,408.00	1,047.00	361.00	
Agriculture	6,803.00	6,672.00	131.00	
Pantry and kitchen	707.50	720.50		13.00
Honey and bees	491.00	494.00		3.00
Dairy	652.00	652.00		
Horticulture	1,905.00	1,759.75	145.25	
Floriculture	1,447.40	1,575.00		127.60
Textile and china	1,114.50	1,150.00		35.50
Graphic and plastic arts	662.00	554.00	108.00	
Educational	1,288.00	1,133.00	155.00	
Scholarships	421.84	475.00		53.16
State spelling contest	100.00		100.00	
Speed premiums	12,145.17	14,319.50		2,174.33
Total paid	$ 67,060.41	$ 69,598.75	$ 2,820.25	$ 5,358.59
Total decrease	2,538.34		2,538.34	
	69,598.75	69,598.75	$ 5,358.59	$ 5,358.59

COMPARATIVE STATEMENT OF EXPENSE OTHER THAN PREMIUMS FOR THE 1915 AND 1916 FAIRS.

	1916	1915	Increase	Decrease
Executive committee meetings	$ 815.50	$ 812.94	$ 2.56	
Special committee meetings	982.46	988.85		$ 6.39
Express, telegraph and telephone	274.27	318.99		44.72
Postage	1,379.00	1,631.00		252.00
Printing	3,048.54	2,903.23	145.31	
Advertising	14,310.39	15,432.13		1,121.74
Music and attractions	20,336.08	22,285.20		1,949.12
Auto races, prizes and bonus	3,464.50	2,050.00	1,414.50	
Light and power—current	818.99	741.82	77.17	
Light and power—labor	699.62	630.72	68.90	
Water	541.49	348.83	192.66	
Supplies, stationery, etc.	493.08	447.17	45.91	
Salaries secretary and assistants	7,167.19	7,305.64		138.45
Board meetings account fair	361.00	577.90		216.90
Forage purchased	8,099.33	8,056.01	43.32	
Assistants and foremen, grounds dept.	579.25	664.45		85.20
Sanitary department	1,069.12	1,099.61		30.49
Track work	71.25	177.75		106.50
Streets, oiling, dragging, etc.	553.32	1,102.48		549.16
Cleaning & preparing grounds & bldgs.	1,372.18	1,644.69		272.51
Refunds	362.25	253.00	109.25	
Decorating all buildings	784.00	1,086.00		302.00
Payroll public safety department	4,346.39	5,352.91		1,006.52
Payroll admissions department	2,812.00	2,830.00		18.00
Payroll treasurer's department	1,542.00	1,379.65	162.35	
Payroll concession department	1,738.50	1,374.50	364.00	
Payroll speed department	710.50	944.66		234.16
Payroll horse department	1,585.00	1,544.88	40.12	
Payroll cattle department	1,312.75	1,003.75	309.00	
Payroll swine department	572.20	494.20	78.00	
Payroll sheep department	386.00	267.00	119.00	
Payroll poultry department	433.81	336.93	96.88	
Payroll machinery department	697.30	754.05		56.75
Payroll agricultural department	634.15	738.30		104.15
Payroll horticultural department	248.80	245.36	3.44	
Payroll floricultural department	119.00	129.00		10.00
Payroll ice cream and dairy department	1,143.95	960.96	182.99	
Payroll textile and china department	419.20	502.60		83.40
Payroll educational and boys' and girls' club department	588.80	476.05	112.75	
Payroll ticket auditing department	355.00	392.50		37.50
Payroll graphic and plastic arts	179.34	298.59		119.25
Payroll press and awards department	100.00	306.00		206.00
Payroll property men	183.15		183.15	
Payroll boys' judging contest	57.40	58.50		1.10
Payroll janitors administration bldg.	237.50	459.75		222.25
Payroll janitors W. & C. building	270.00	343.00		73.00
Payroll W. & C. building	127.00	178.00		51.00
Payroll baby health department	631.65	768.63		136.98
Expense programs W. & C. building	231.92	80.11	151.81	
Expense reproducing "Horn of Plenty"	2,734.31		2,734.31	
Expense boys' State Fair Camp	1,509.98	1,612.06		102.08
Plants and flowers	521.77	752.63		230.86
Cups, medals and engraving	546.71	468.85	77.86	
Premium ribbons, badges, etc.	1,153.30	1,001.97	151.33	
Rental tents, cots, bedding, etc.	1,466.95	894.00	572.95	
Misc. signs for buildings and exhibits	408.45	182.75	225.70	
Ground supplies	415.69	463.91		48.22
Misc. labor during fair	1,328.28	1,458.42		130.14
Des Moines Day keys and advertising	638.52		638.52	
Iowa State College exhibit		773.39		773.39
Freight and drayage	204.57	278.42		73.85
Watchman	102.50	130.00		27.50
Rental plowing demonstration ground	150.00	98.00	52.00	
Tan bark for stock pavilion	161.99	188.64		26.65
Water system	225.80	101.45	124.35	
All other items of expense	1,322.51	378.60	943.91	
Total expense other than premiums	$ 102,337.45	$ 101,761.38	$ 9,424.00	$ 8,847.93

Increase, $576.07.

SPEED DEPARTMENT, IOWA STATE FAIR AND EXPOSITION. SUMMARY REPORT, 1916.

CLASS	Amount of Purse	Amount Paid	Entry Fees	Net Cost	No. of starters
HARNESS RACES.					
TROTTING—					
2-yr-old trot	$ 400.00	$ 320.00	$ 96.00	$ 230.00	6
Refund entry fee		6.00			
2:25 trot	800.00	640.00	240.00	448.00	9
Refund entry fee		48.00			
2:20 trot	800.00	640.00	144.00	508.00	6
Refund entry fee		12.00			
2:15 trot	800.00	640.00	312.00	400.00	13
Refund entry fee		72.00			
2:10 trot	1,000.00	800.00	190.00	640.00	6
Refund entry fee		30.00			
2:15 team trot	500.00	500.00	------------	500.00	3
2:15 saddle trot	300.00	300.00	------------	300.00	3
PACING					
2-yr-old pace	$ 300.00	$ 225.00	$ 27.00	$ 198.00	3
2:25 pace	700.00	560.00	168.00	392.00	7
2:18 pace	700.00	590.00	84.00	506.00	4
2:15 pace	700.00	560.00	210.00	402.00	10
Refund entry fee		52.00			
2:10 pace	700.00	525.00	63.00	462.00	3
Free-for-all pace	1,000.00	750.00	90.00	660.00	3
Free-for-all team pace	500.00	400.00	------------	400.00	2
Total	$ 9,200.00	$ 7,670.00	$ 1,624.00	$ 6,046.00	78
FUTURITIES—					
Iowa State Fair Futurity No. 1, Trotting Division	1,440.00	1,440.00	740.39	699.61	10
Iowa State Fair Futurity No. 1, Pacing Division	617.00	617.00	317.00	300.00	2
Western Breeders' Futurity,					
Bonus paid for futurities		300.00		300.00	
Trotting Division	718.17	718.17	718.17	------------	5
Total	$ 2,775.17	$ 3,075.17	$ 1,775.56	$ 1,299.61	17
RUNNING RACES					
State Fair Derby	$ 500.00	$ 500.00	$ 175.00	$ 325.00	6
1 mile run	200.00	200.00	40.00	160.00	4
1 mile run	200.00	200.00	50.00	150.00	5
6 furlong run	150.00	150.00	60.00	90.00	8
6 furlong run	150.00	not raced	------------	------------	----
7 furlong run	150.00	not raced	------------	------------	----
5 furlong run	150.00	not raced	------------	------------	----
5 furlong run	150.00	150.00	37.50	112.50	5
5½ furlong run	100.00	100.00	25.00	75.00	5
4½ furlong run	100.00	100.00	25.00	75.00	5
Total	$ 1,850.00	$ 1,400.00	$ 412.50	$ 987.50	38
Totals for harness races	11,975.17	10,445.67	3,099.17	7,345.61	95
Grand totals	$ 13,825.17	$ 12,145.17	$ 3,812.06	$ 8,353.11	133

The following is the attendance of the 1916 fair, by days, compared with 1910, 1911, 1912, 1913, 1914 and 1915 fairs:

	1916	1915	1914	1913	1912	1911	1910
Wednesday	4,871	3,112	4,537	3,847			
Thursday	9,064	7,610	9,886	8,608	3,090	[illegible]	
*Friday	30,671	27,722	27,613	33,020	7,503	6,063	4,296
†Saturday	29,853	17,158	27,999	26,861	27,957	27,957	30,512
Sunday	24,236	14,190	22,200	25,211	18,902	17,612	16,662
Monday	46,933	35,685	41,229	58,045	40,602	37,309	25,355
Tuesday	59,926	47,501	39,612	66,467	60,379	64,6[illegible]9	52,208
Wednesday	49,033	44,103	46,496	40,972	58,643	[illegible]	57,918
Thursday	24,270	31,955	31,523	17,431	38,831	34,117	31,814
Friday	13,115	16,630	21,978		16,116	18,173	12,468
Totals	291,972	245,066	273,073	280,462	272,023	270,082	231,233

*Children's day, 1913-1914-1915-1916.
†Children's day, 1910-1911-1912.

ADMISSIONS TO GRAND STAND, AFTERNOON AND EVENING, 1916, COMPARED WITH 1913, 1914 AND 1915.

	1916 Fair		1915 Fair		1914 Fair		1913 Fair	
	Day admissions	Night admissions	Day admissions	Night admissions	Day admissions	Night admissions	Day admissions	Night admissions
Friday	3,824	6,005	3,237	4,202	3,570	5,243	3,731	5,865
Saturday	8,084	6,660	2,164	1,021	5,406	5,921	4,911	5,848
Monday	11,432	16,574	8,227	10,328	10,883	9,151	11,358	17,316
Tuesday	13,161	16,844	10,001	12,546	7,922	8,018	12,162	15,966
Wednesday	10,596	12,533	9,381	11,248	12,927	11,741	7,742	8,226
Thursday	3,055	*	6,552	8,450	8,506	7,295	4,276	1,600
Friday	5,506		6,691		13,174			
Totals	55,658	58,616	46,253	47,795	62,388	47,369	44,180	54,821

*Show called off on account of rain.

ADMISSION TO LIVE STOCK AND HIPPODROME SHOW, 1916, COMPARED WITH 1912, 1913, 1914 AND 1915.

	1916	1915	1914	1913	1912
Saturday	942	[illegible]	806	1,042	
Monday	1,581	1,029	[illegible]	1,826	1,233
Tuesday	2,107	1,580	2,113	2,472	2,265
Wednesday	1,501	1,242	1,264	1,566	2,070
Thursday	667	493	[illegible]	438	1,262
Totals	6,798	4,228	5,71[illegible]	7,344	6,830

The following table gives the number of exhibitors and the number of entries made in each department of the 1915 and 1916 fairs:

Department	1916 Fair		1915 Fair	
	No. of exhibitors	No. of entries	No. of exhibitors	No. of entries
Horses	127	1,791	120	2,016
Cattle	129	2,001	94	1,803
Swine	166	2,663	161	2,648
Sheep	29	605	28	875
Poultry	133	2,458	119	1,578
Agriculture	218	2,197	185	2,052
Pantry	155	2,215	215	2,614
Dairy	82	82	89	89
Horticulture	38	1,290	58	1,340
Floriculture	27	391	28	384
Textile, China, etc.	295	2,291	278	2,748
Graphic and Plastic Arts	52	162	30	105
Educational	192	1,044	194	1,179
Machinery and Implements	310	---------	337	---------
Totals	1,954	19,190	1,936	19,431

The following tabulation gives the number of exhibitors and the number of horses, ponies and mules entered, and the actual number shown at the 1915 and 1916 fairs:

Breed	1916 Fair			1915 Fair		
	No. of exhibitors	No. of horses entered	No. of horses shown	No. of exhibitors	No. of horses entered	No. of horses shown
Percheron	32	197	162	33	165	139
Clydesdale	13	86	70	12	97	62
Shire	15	82	67	16	104	75
Belgian	16	158	122	21	153	125
Suffolk Punch	------	---------	---------	---------	---------	---------
Draft Geldings and Mares	30	70	40	17	44	30
Standard Bred and Show Horses	16	52	*103	17	73	*131
Saddle Horses	16	70	---------	12	66	---------
Hunters and Jumpers	4	11	---------	5	22	---------
Morgans	3	21	17	2	14	---------
Hackney	5	12	11	9	24	---------
Shetland Ponies	13	127	121	12	100	†100
Welsh Ponies	5	26	11	7	37	---------
Hackney Ponies and others	9	26	24	5	11	---------
Mules	3	28	13	3	19	18
Jacks	4	6	6	2	4	4
Totals	127	972	767	120	923	684

*Includes all light harness horses and saddle horses.
†Includes all ponies.

The following tabulation gives the number of cattle exhibitors and the number of cattle entered by breeds, and the actual number of cattle shown at the 1915 and 1916 fairs:

BREED	1916 Fair			1915 Fair		
	No. of exhibitors	No. of cattle entered	No. of cattle shown	No. of exhibitors	No. of cattle entered	No. of cattle shown
Shorthorn	43	361	322	31	300	200
Hereford	15	185	144	12	207	132
Aberdeen Angus	9	159	134	16	191	139
Galloway	3	36	36	3	44	43
Polled Durham	9	72	58	6	54	48
Red Polled	6	93	93	4	80	79
Holstein	18	137	133	6	81	79
Jersey	4	56	56	8	119	51
Guernsey	5	80	73	4	56	28
Ayrshire	4	83	83	2	35	32
Brown Swiss	3	48	31	2	36	31
Board of Control Cattle	1	40	40			
Totals	120	1,350	1,203	94	1,203	862

The following tabulation gives the number of exhibitors and number of swine entered by breeds and the actual number of swine shown at the 1915 and 1916 fairs:

BREED	1916 Fair			1915 Fair		
	No. of exhibitors	No. of swine entered	No. of swine shown	No. of exhibitors	No. of swine entered	No. of swine shown
Duroc Jersey	50	761	682	52	741	633
Poland China	53	689	649	44	623	553
Chester White	34	572	473	39	757	725
Hampshire	16	381	351	18	382	301
Berkshire	4	99	63	1	39	28
Yorkshire	6	123	109	4	67	67
Tamworth	2	18	9	2	39	37
Mule Foot	1	20	20	1	21	21
Totals	166	2,663	2,356	161	2,669	2,365

The following table sets forth the amount of cash premiums paid in all

	1916	1915	1914	1913	1912
Horses	$ 14,412.00	$ 17,364.00	$ 18,537.50	$ 15,612.50	$ 14,940.00
Cattle	15,176.00	14,120.00	12,673.25	12,623.00	11,738.00
Swine	4,570.00	4,188.00	4,499.00	4,464.00	4,042.00
Sheep	3,757.00	3,375.00	2,779.00	2,317.00	2,306.00
Poultry	1,408.00	1,047.00	1,036.50	1,172.50	1,112.50
Agriculture	6,803.00	6,672.00	5,398.00	4,173.00	4,059.00
Pantry and kitchen	1,198.50	1,214.50	1,251.00	1,215.00	1,092.50
Dairy	652.00	652.00	652.00	602.00	627.00
Horticulture	1,905.00	1,759.75	1,680.00	1,614.00	1,139.25
Floriculture	1,447.40	1,575.00	1,535.60	1,439.40	1,382.40
Textile and China	1,114.50	1,150.00	1,183.00	1,658.50	1,662.50
Graphic and plastic arts	662.00	554.00	561.00	----------	----------
Educational department	1,288.00	1,133.00	931.00	665.00	430.00
Scholarships	421.84	475.00	425.00	650.00	650.00
Speed premiums	12,145.17	14,319.50	13,283.00	12,620.00	12,360.00
Dog show	----------	----------	----------	----------	318.00
*Baby health department	----------	----------	----------	----------	280.00
State spelling contest	100.00	----------	----------	----------	----------
Total premiums	$ 67,060.41	$ 69,598.75	$ 66,424.85	$ 61,069.90	$ 58,139.15

*Cups and medals given in place of cash prizes since 1912.

CONDENSED FINANCIAL STATEMENT OF THE STATE DEPARTMENT

Showing Receipts and Disbursements of Iowa State Fair and Other
ments, Repairs, Etc., and Net Profit of

	Receipts						Disbursements	
	Cash balance beginning of year	From state fair	From state appropriation	From other sources	Total receipts for year	Grand total	Premiums paid	Other fair expenses
1896	$ 116.79	$ 36,622.10	$ 7,000.00	$ 6,710.22	$ 50,332.32	$ 50,449.11	$ 16,404.29	$ 15,351.06
1901	28,616.55	50,712.91	1,000.00	2,753.82	54,466.73	83,083.28	19,203.83	13,925.87
1902	34,244.93	63,084.71	38,000.00	3,037.06	104,121.77	138,366.70	21,736.31	20,073.34
1903	30,372.25	59,838.56	1,000.00	3,140.79	63,979.35	94,351.60	23,813.13	21,989.56
1904	28,963.11	66,100.36	48,000.00	2,622.03	116,722.39	145,685.50	24,691.68	28,485.42
1905	29,657.23	84,786.25	1,000.00	2,840.92	88,627.17	118,284.49	28,730.89	34,408.62
1906	39,976.34	110,929.85	1,000.00	3,717.16	115,647.01	155,623.35	31,703.94	40,315.60
1907	50,195.87	104,356.75	76,000.00	5,452.34	185,908.09	236,103.96	35,504.79	43,647.20
1908	35,227.90	138,764.66	1,000.00	3,262.95	143,027.61	178,355.51	38,744.56	55,848.65
1909	25,328.73	137,307.40	101,000.00	5,257.42	243,564.82	268,893.55	42,262.76	66,963.12
1910	4,985.25	157,259.77	1,000.00	14,658.30	171,918.07	176,903.32	49,717.50	80,513.68
1911	7,283.44	179,549.67	78,000.00	5,275.72	262,825.39	270,108.83	56,264.35	81,603.16
1912	18,036.99	185,701.21	8,000.00	14,579.82	208,281.03	226,318.02	58,139.15	85,829.74
1913	615.63	188,832.10	30,786.81	17,211.86	236,830.77	237,446.40	61,069.90	85,670.12
1914	18,505.82	188,644.66	51,268.19	32,799.93	272,712.78	291,218.60	66,024.85	104,411.33
1915	968.73	165,604.40	36,666.73	51,949.80	264,220.93	265,189.66	69,598.75	101,561.38
1916	100.63	201,381.96	9,133.27	3,366.59	247,165.32	247,265.95	67,060.41	102,137.45

departments of the fair for a period of ten years.

	1911	1910	1909	1908	1907
Horses	$ 14,184.00	$ 10,381.00	$ 7,273.00	$ 6,046.00	$ 4,567.00
Cattle	12,061.00	11,778.00	10,153.00	8,848.26	8,359.00
Swine	3,640.00	4,135.00	3,035.00	3,168.00	2,565.00
Sheep	2,388.00	2,146.00	2,057.00	1,939.00	1,892.00
Poultry	1,042.00	1,036.00	988.50	795.50	883.00
Agricultural	3,524.00	3,074.00	2,976.50	2,932.50	2,745.50
Pantry and kitchen	856.50	798.00	793.00	756.50	711.00
Dairy	627.00	602.00	596.81	602.00	615.99
Horticulture	1,115.75	892.00	907.25	860.50	945.50
Floriculture	1,278.60	945.00	884.20	815.80	881.80
Textile and China	1,744.50	1,753.00	1,812.50	1,786.50	1,782.00
Graphic and plastic arts					
Educational department	493.00	422.00	261.00		
Scholarships	850.00	1,000.00	1,000.00	500.00	500.00
Speed premiums	12,310.00	10,755.00	9,190.00	9,360.00	8,725.00
Dog show					
*Baby health department					
State spelling contest					
Total premiums	$ 56,114.35	$ 49,717.50	$ 41,927.76	$ 38,410.06	$ 35,172.79

*Cups and medals given in place of cash prizes since 1912.

OF AGRICULTURE FOR YEARS OF 1896 AND 1901 TO 1916, INCLUSIVE.
Sources and Expenditures, together with Amount Expended for Improve-
Fair for Each of the Years Named.

	Disbursements					Profits of Fair		
	Improvements and permanent repairs	Maintenance of grounds and buildings	Disbursements other than for fair	Total for year	Cash on hand	Total receipts of fair	Total expenses of fair	Net Profits
1896	$ 7,471.95		$ 14,019.88	$ 58,247.28	$ 152.84	$ 36,622.10	$ 31,807.35	$ 4,814.75
1901	13,378.73		2,313.44	48,821.87	34,244.93	50,712.91	33,129.70	17,583.21
1902	63,457.12		2,608.69	107,875.46	30,372.25	63,084.71	41,809.65	21,275.06
1903	17,855.77		1,704.83	65,363.29	28,963.11	59,838.56	45,802.69	14,035.87
1904	59,641.11		3,195.43	116,013.64	29,657.23	66,100.36	53,177.10	12,823.26
1905	11,963.09		3,345.27	78,447.87	39,976.34	84,786.25	63,139.51	21,646.74
1906	30,035.33		3,385.87	105,440.74	50,394.87	110,929.85	72,459.39	38,470.46
1907	16,159.05		5,043.03	200,654.07	35,327.90	104,356.75	79,151.99	25,204.76
1908	53,663.69		4,975.50	153,231.98	25,328.73	138,764.66	94,593.21	44,171.45
1909	150,208.58		4,379.91	263,814.37	4,985.25	137,307.40	109,225.88	28,081.52
1910	24,360.98		14,740.26	169,332.42	7,283.44	157,259.77	130,231.18	27,028.59
1911	109,755.04		4,429.29	252,071.84	18,036.99	179,549.67	137,867.51	41,682.16
1912	71,056.56	$ 6,575.51	4,101.43	225,702.39	615.63	185,701.21	143,968.89	41,732.32
1913	51,110.85	7,313.67	13,776.04	218,940.58	18,505.82	188,832.10	146,740.02	42,092.08
1914	100,649.13	7,564.86	11,599.70	290,249.89	968.73	188,644.66	172,113.92	16,530.74
1915	46,138.60	6,770.91	41,019.39	265,089.03	100.63	165,604.40	171,160.13	*5,555.73
1916	10,547.28	3,432.77	60,089.87	243,267.78	3,998.17	201,381.96	169,197.86	32,184.10

*Loss.

STATEMENT OF INSURANCE IN FORCE ON FAIR GROUNDS BUILDINGS AND DATE OF EXPIRATION.

Buildings	Fire	Tornado	Premiums	Expirations
General form on frame buildings	$ 58,000.00	$ 58,000.00	$ 2,320.00	1919
Brick horse barns		10,000.00	50.00	1919
Brick horse barns	14,500.00	14,500.00	412.54	1918
Brick cattle barn No. 1	3,000.00	3,000.00	85.00	1918
Brick cattle barn No. 2	3,000.00	3,000.00	68.25	1919
Transformer station and contents	2,000.00	1,000.00	43.00	1919
Women and Children's building	15,000.00	15,000.00	300.00	1917
Agricultural building	10,000.00	10,000.00	296.00	1917
Administration building and contents	20,000.00	15,000.00	576.00	1917
Stock pavilion	15,000.00	15,000.00	450.00	1917
Machinery hall		15,000.00	71.00	1917
Swine pavilion		15,000.00	75.00	1919
Grand stand		10,000.00	90.00	1917
Farm house	1,500.00	1,500.00	21.87	1919
Farm barn	500.00	500.00	7.13	1919
Brick dining halls	4,000.00	2,000.00	101.66	1918
Street car station		2,000.00	10.00	1919
Sheep barn		13,000.00	39.00	1919
Total insurance	$146,500.00	$203,500.00	$ 5,016.45	

The Committee on Resolutions presented the following report, which was unanimously adopted.

REPORT OF COMMITTEE ON RESOLUTIONS.

To the Members of the State Agricultural Convention:

Gentlemen:—We commend the state board for its efficient management during the past year and join with President Cameron in his wish that the attendance in 1917 may pass the 300,000 mark.

We ask the incoming legislature for an appropriation sufficient to thoroughly equip the state fair with buildings needed for live stock and the proper display of exhibits in all departments.

Resolved, That it is the sense of this meeting that the cost of maintenance of all buildings on the state fair grounds should be borne by the state, the same as other state institutions.

Resolved, That this convention extend to Dean Curtiss a vote of thanks for his instructive and interesting address on South America, its conditions and industries.

Resolved, That this convention regrets to learn of the illness of the faithful member of the State Board of Agriculture from the Fifth District, Mr. Cyrus A. Tow, and that the president and secretary be instructed to send him our best wishes and hopes for his speedy recovery.

We believe in the best possible education for the youth of Iowa and are opposed to the abolishment of the two-year course at the Iowa State College or the curtailment of the work of the institution in any manner.

We recommend, so far as possible, actual demonstrations of all farm machinery, road grading, dairy apparatus and other mechanical devices at the state fair.

CHAS. H. BARBER,
J. C. BECKNER,
W. M. CLARK,
Committee on Resolutions.

THE FUNCTION OF A STATE FAIR AND ITS EDUCATIONAL FEATURES.

By J. C. Simpson, Secretary Eastern States' Agricultural and Industrial Exposition, Springfield, Mass.

Does the public generally know the function of a state fair? Does it know that as a sale center it affords the breeder of pure-bred live stock the best kind of an opportunity to dispose of his animals, and to locate and form the acquaintance of other breeders? Does it know, or realize, that the Iowa State Fair has been the greatest of all the states' educational propagandas, that it has placed Iowa in the lead as having a greater number and larger percentage of pure-bred stock than any other state in the Union? Does it realize that the Iowa State Fair has in its annual swine show provided the greatest market place throughout the entire word for the buying and selling of pure-bred hogs? Does it know that it is possible to carry on a great educational work for one week each year, with an equipment owned by the state, at a less per capita cost to those who desire to take advantage of this splendid opportunity to gain knowledge by exposition and model, than by any other medium? Does it know that the state fairs, through their opportunity to instruct by exposition and model, brought the manure spreader into general use on the farms of America ten years in advance of the time? I would dislike to tell you what a member of your present Board of Agriculture said about the manure spreader and the man who would use it, the first year it was shown at the Iowa State Fair. And what about the silo? How many of you gentlemen ever saw a silo until the silo manufacturers began to show them at the fair, and still there have been silos in use in Iowa for thirty years or perhaps longer. One of the Iowa men who helped to make Shorthorn history, for years and years made the feeding of ensilage a part of the rations he fed in producing top-notch cattle; still, not even his neighbors took to the silo until the manufacturers began to exploit and tell about its use in the economy of feed, spending large sums of money to put them up at the fair for exhibit and demonstration purposes; nor did the public generally accept them as a necessary equipment on every well-regulated farm. Does the public generally recognize these facts? I think not, for if they were more familiar with these and other facts concerning the function of a state fair, they would cease grumbling about the one-week use of the fair ground equipment and the tawdry purpose of fairs.

One of the most perplexing problems confronting a state fair management, is what method can best be employed to educate the public to the proper function of a fair. What was meant by the word "education" twenty-five years ago, is not what we mean by education in relation to our own problems, especially in agriculture. Years ago the man whose hand was trained could easily make a living from the fat soil; today the man who succeeds on the farm must have a trained mind. In other words, where the hand used to rule, the head now holds sway. We do not need less brawn but more trained minds.

The educational features of a state fair cover every phase of its activity. A fair management is constantly confronted by the arguments of persons opposed to entertainment in any form, and who are unalterably in favor of only the more serious side of education. Such arguments only expose the ignorance of those who advance them, as to the importance of recreation in the educational field. Hall once said, "Recreation is intended to the mind as whetting to the scythe, to sharpen the edge of it, which otherwise would grow dull. He therefore who spends his whole life in recreation is ever whetting and never mowing. Per contra, he who always toils and never recreates is ever mowing and never whetting. He is laboring to little purpose, for no scythe is good which has no edge."

Entertainment is too often the football of the fair critic. Groundless complaint is made too frequently against the recreational features of a fair. There is often too much blind, unthinking adoration of the educational features which are purely educational in a cold, analytical way. There are many people who will argue heatedly against the recreational program of a fair, yet when the horse racing begins, crowd their way into the grandstand, lest they will miss some excitement. Only a few years ago one of the best known cattle breeders of England was at the Iowa State Fair in the capacity of judge of Shorthorn cattle. One day at luncheon he expressed a desire to see the races for a moment, as he had never seen a trotting race or a pacing horse. He went over to the grandstand after lunch, and became so engrossed in the entertainment that he almost forgot to go back to the ring.

The effectiveness of any of the many educational features now generally accepted and applied to the several sub-divisions of a great state fair and exposition, depends largely upon the ability of the management to grasp the right idea in staging the show. Each department exhibit should be comprehensive in scope, forceful in its display, and simple in its arrangement. It is far better for a management to eliminate entirely from its show any departmental exhibit, if it cannot be staged in a forceful manner, that will attract the eye and command the admiration of the vistor. To illustrate: in my judgment, one flock of chickens, consisting of one male and eight or ten females, properly displayed in small open pens, is of far greater educational force than four times the number of birds displayed in individual coops. A hundred boxes of apples, showing proper assortment and packing, ready for market, is vastly more instructive to the majority of fair visitors, than ten times the amount of apples displayed on plates, of from three to five apples to the plate. The box exhibit tells the story of the possibility of the industry in a forceful manner, and leaves a lasting impression with the visitor, while the other merely excites momentarily his admiration. An actual demonstration of the handling and care of bees, extracting and bottling of honey, certainly presents far greater instructive possibilities than does the cold, still display of comb and bottled honey, no matter to what extent it may be.

A most perplexing problem confronting a state fair management, is how best to stage the exhibit, to best drive home the great object of the show. A new set of economic and social conditions has been developed in America since our forefathers laid the foundation for the state fair. This changed condition cannot properly be dealt with if we employ old methods entirely. There is no moral obligation resting upon us to maintain the old structure after it has outlived its usefulness.

Time will see a change from our present methods in showing live stock. Animals will not only be stalled in breed groups, but each breed according to age. After the ribbons have been tied, they will again be placed in the stalls and pens in the order of their rank in the show ring. This is only possible—or we might more appropriately say, practical—when each class of live stock is conveniently housed under one roof.

Take your art exhibit: by bringing into this exhibit animation and life, it can be made of much greater educational force than by simply having a cold display of paintings and drawings. The Minnesota State Art Commission, under the directorship of Maurice I. Flagg, is coupling up art with agriculture, as well as all lines of industry. The art exhibit at the last Minnesota State Fair was shown to over a quarter of a million Minnesotans in a single week. It consisted of a notable collection of American paintings, gave to every artist in the state of Minnesota honor where honor was due, and actually instructed sixty thousand persons in picture making and in the enjoyment of pictures and sculpture. An outdoor gallery was arranged, where the director of the Milwaukee Society of Fine Arts, Dudley Crafts Watson, gave lectures and demonstrations in picture making. As Mr. Watson expressed it, here he found the response on the part of the "man of the soil," hearty and genuine.

Another educational feature of this year's Minnesota State Fair was found in the wood building materials exhibit. Besides the model, consisting of nine perfect houses, all built of white pine and to a scale, with streets, walks, lawns, gardens, street lights, etc., all of which was quite interesting and attracted much attention, the Northwestern Lumbermen's Association put on an exhibit showing the different grades of lumber sold on the lumber market today. You would have been astounded at the interest taken in this rough board exhibit, and more so by the ignorance of 99 per cent of the people as to grades.

TWO WAYS OF LEARNING.

There are two ways of imparting knowledge,—one by exposition and model, the other by precept. The former method has many advantages over the latter, which will occur to all of you. In the first place, all people can and do learn by seeing things; only a comparatively few by studying precepts and rules. There are so many things which you cannot teach in any way but by model and exposition. Take for example the grades of grain, or standardization in packages and market grades. You cannot produce an animal or breed up a herd of cattle to a high degree of perfection without the ideal in mind, to which you are working. The breeder must first have the conception or mental picture, before he can produce the animal. The same is true in all lines of endeavor, not only agricultural but industrial affairs. The state fair is, in my mind, the greatest existing exponent of the most important of all methods of imparting instruction, viz.: exposition and model. It brings together the highest accomplishment in products, from the farm and from the factory, acceptedly staged, at nominal admission cost, thus bringing it within the range, not of the few who can attend schools and colleges, but of the great masses who are performing the world's work, and surrounds it all with good music, high class entertainment, art and science, in such happy equipoise, as to make it not alone a people's school of practical liberal arts and sciences, but of fine arts and entertainment as well.

SHOULD THE STATE FAIR BE SELF-SUPPORTING?

Often we are asked, "Why is not the state fair self-supporting?" Or "Why does the fair board ask the legislature to appropriate money for the fair?" We might answer by asking numerous questions just as apt. For instance: why is the legislature asked to appropriate money for the governor's office? Why is a county asked to appropriate money to build bridges? Or, why is a city government asked to appropriate money for fire protection? Such questions sound foolish. I agree with you that no intelligent man would think of asking them; but this same man, thoughtlessly will come into your office, Mr. Corey, and in all seriousness, ask you why the state fair is not self-supporting. He does it because of his ignorance of the purposes and fundamentals for which the State of Iowa has, by legislative enactment, decreed that an annual state fair shall be held. Yes, they have gone farther, by purchasing land upon which a permanent state exposition was to be built.

The fair is an educational institution for all of the people, and not for the few. If it is not, then its continuance canot be justified upon any ground, because it is not a proper function of government to conduct enterprises which have for their primary purpose the making of money.

There is not one among you, or for that matter, in the State of Iowa, who believes your public school or colleges should be self-sustaining, or that the burden of taxation for their support should fall wholly upon those whose children are enrolled. This does not, never did, and never will apply in any form of public education, for the reason that this form of education reaches all classes directly or indirectly, and the burden for such support must, in our form of government, fall upon the shoulders of all, in accordance with their property holdings. All educational units have for their purpose the one great object in view, to wit: The training of the mind and body to fit the student to better cope with life's great problems in agriculture, industry, home making, and all that goes to make prosperity and happiness. As the late Dr. Henry Wallace, that giant of intellect, once said:

> "The State Fair is a great university, which teaches by object lessons. It is the state on exhibition. It is a great showing of all methods and processes by which a state has attained its position in the world, and a right to acclaim its greatness. It is the advertising agent of the state. It is the great show window of its store of accomplishments, the exposition center of all interests and industries, and the place and playground for the annual reunion of its citizens. To ALL its people the educational value of the State Fair is unquestioned and unmeasured."

There was a time when a very wide impression prevailed that you must minimize the value of the state fair and cut off from it all state support, in order that county fairs might be built up. Happily, intervening years have solved this problem, until today it is generally understood that the county fair is merely the complement of the state fair, just as the grade schools are the complement of the high schools, and that without the grade schools the scholarship standard of the high school must be low indeed, and per contra, without the high schools the limitations placed upon the more ambitious youth of our land would be greatly curtailed.

One of the strongest features of the Iowa State Fair is the camp. Here is to be found a tented city for the week, with a population of from three to four times that of the average county seat town. People come from all parts of the state, and even from outside the borders of Iowa. Families and neighborhood groups make up this great temporary city. There you will find those who annually make the pilgrimage to the Iowa State Fair, where they have all the pleasures to be derived from an outing in the woods, combined with the opportunity of going to school, with a high-grade, first class exhibit as the tutor. To my way of thinking, this is one, if not the greatest educational feature of the annual fair.

Mr. Ray P. Speer, publicity agent for the Minnesota State Fair, in a paper given before the last annual meeting of the Minnesota State Agricultural Society, entitled, "The Functions of State Fair Entertainment," coupled up music as one of the essential educational features of a state fair, by quotations from great musicians and philosophers. Bovee said music was the fourth great material want of our nature; first, food; then raiment; then shelter, and music. While Aristotle reserved seven chapters in his immortal work, "Politiks," to prove that music was the best means of public recreation. Other philosophers of his time, as well as of today, must have believed him right, for music then, as now, played an important part in the whole educational system. Therefore high grade music at a state fair is rightfully classed as one of the educational features.

So we may go on and analyze the whole amusement program, where the entertainment is of a clean character, and prove to you conclusively that such entertainment is an essential component of education, and therefore has a legitimate place in every well-balanced state fair program.

In conclusion, let me admonish you to remember, when apportioning your educational taxes, that "grownups are in need of learning quite as much as school children." That in knowledge there is profit, and knowledge is so easily obtained at the state fair. That all forms of entertainment and recreation of a clean character, are educational, and as such must be grouped along with exhibits, contests and demonstration, as educational features of any state fair and exposition.

WHAT I SAW AND LEARNED AT THE IOWA STATE FAIR.

BY NEWELL BEATTY, FAIRFAX.

The 1916 Iowa State Fair was the biggest and best ever held in Iowa. Each boy who was a member of the 1916 Boys' Camp went home feeling deeply grateful to the fair management for defraying our expenses and entertaining us nine big days. We had the best time we ever had in our lives and it was worth more to us along educational lines than a year's schooling.

Practically all of the boy campers arrived on the fair grounds Thursday and the day was spent in registering and getting acquainted. We were housed in two large comfortable tents and were given meals at one of the best dining halls on the grounds. The hour for retiring was ten o'clock and for rising six-thirty. We had for leaders six good christian men. Each morning a chapel service was held, after which the duties for the day were outlined. At each meeting Mr. Hansen, camp superintendent, —and a very good superintendent he was—provided a speaker and we boys from the farms thoroughly enjoyed the talks and discussions by the various speakers.

One day we were taken to the city of Des Moines, where we saw many things to interest and entertain us. On our return to the fair grounds we stopped off at the Capitol and climbed to the dome, after which we went to the Historical building by way of the underground tunnel. I enjoyed seeing the relics on display at this building and I hope to be able to spend more time there soon.

On Friday, August 25, a Boys' Judging Contest was held in the Stock Pavilion, six hundred dollars being offered in scholarships at the Iowa State College of Agriculture and Mechanic Arts. The majority of the boy campers competed and the camp took second and fourth places. Like a good many other boys, I entered the contest for the experience I would get out of it more than anything else. I did not expect to win, and did not win a prize for I had never studied live stock judging. Nevertheless I feel well repaid for having entered the contest.

Each day of the fair we were required to usher at the Amphitheater, Stock Pavilion and Baby Show, and sometimes were asked to assist in the judging rings. This did not occupy a great deal of our time and we were glad to do it for it gave us the feeling that in our small way we were helping to stage the great Iowa State Fair.

Of all the attractions at the fair I think the live stock show was of the most vital interest and the greatest educational feature. I saw the results of persistent effort in the breeding and handling of blooded stock and I began to realize why Iowa takes a commanding position among her sisterhood of states and why her state fair is supreme in almost all respects. The horse, cattle, swine and sheep barns were filled to overflowing and it was a beautiful sight to see the animals in the judging rings and in the barns.

One of the things which interested me particularly was the cow-testing exhibit. I believe this was a new feature at the Iowa State Fair this year and I am sure a great number of people were benefited by this exhibit.

Another new feature was the sheep-shearing contest, which I found quite interesting.

In the Agricultural Building I saw a duplicate of The Horn of Plenty, which attracted so much attention at the Panama-Pacific Exposition at San Francisco last year. It certainly was a beautiful sight and I am grateful for having had the opportunity of seeing it. In this building I saw the county exhibits, individual farm exhibits, horticultural exhibits, dairy exhibits, pantry stores, etc. Each of these various exhibits received considerable attention by the state fair visitors.

I enjoyed my visit to the Poultry Building, the Auto Show, the College Building, the Game Preserve and the Machinery Building. I was also much interested in the exhibits put on by the Highway Commission, State Department of Mining and Geology, Pure Food Department and the State Board of Control. I derived considerable practical knowledge from viewing some of these exhibits.

However, we boys were not at the fair entirely for educational profit. Almost every one of us had spent the summer in hard work on the farm and for three long months had looked forward to the fair as our vacation time. We were not disappointed. We enjoyed immensely the amusements provided by the fair management. We saw horse and automobile races of the highest class, in which were entered the best animals, machines and drivers to be found. We saw Ruth Law, America's most spectacular and daring aviatrix, make at least two and three flights every day, and at night she used fireworks so that we might follow her flight in the air. We found a good deal to interest us at the night show at the Stock Pavilion, but for me the best entertainment on the grounds was the show in front of the amphitheater—The Last Days of Pompeii. This to me was a wonderful fireworks display and I also found the fifteen different vaudeville acts fascinating and entertaining. I found pleasure in the band concerts played by the Liberati and Henry bands but especially did I enjoy the Hawaiian orchestra.

I spent nine notable days at the fair. I have thought of my trip continually since returning home and I shall always remember it by the good times I had, by the wonderful things I saw, by the many things I learned and by the friendships I formed and hope to renew at the camp reunion in 1918.

COW-TESTING ASSOCIATIONS AND DEMONSTRATIONS.

BY H. C. BARKER, AMES.

The cow-testing association, as you know, is not a new thing at all. We have had cow-testing associations in the United States since 1905 patterned after those in Denmark. They have had associations in Denmark for about 25 years and have made a wonderful increase over there in their production. You will realize this, I think, when I tell you that when they started their cow-testing associations 20 years ago their average production was 112 pounds of butterfat a year. At the end of 21 years their average production was better than 250 pounds to the cow. In other words, it had increased 100 per cent in 21 years. In our own country here we have not been in the business long enough to show such a marked increase in production as that, but nevertheless the increase in production in our associations is growing very rapidly. In the United States at the present time we have about 320 associations; July 1, 1915, we had 210, and July 1, 1916, we had 320. That will give you some idea of the rapidity of the growth and the way the people are taking hold of it. This increase in the United States is quite characteristic of the increase in our own state. July 1, 1915, in Iowa we had 13 associations and July 1, 1916, we had 23; and now at the present time we have 24 in operation. We have three more that are organized and will go ahead just as soon as we can get men to do the work, and we have more than that to be organized before spring. We have 50 communities working at the present time. Perhaps it would be well to say something about the organization of an association.

The cow-testing association is a co-operating association between the farmers. It takes 26 men to make an organization because there are 26 working days in the month. These men get together and agree to test their cows for a year. After they get organized in a community they hire a man to do the testing. They pay him according to the number of cows they have, so much a cow, and our associations are organized to pay not more than $1.60 a year for each cow, so 320 cows to an association make it self-supporting; that is, so far as the salary of the tester is concerned. The state college furnishes the record books and all the testing material for the association. The work of this man is something like this: He arrives at the farm in the evening when I milk; I put the milk into his weighing can and he weighs it and takes a sample for testing; tomorrow morning he does the same thing and tests the samples for butter fat for that day. Then he takes that as the average for the month, figures the monthly record on that basis and gives the cow credit for it. The idea of the proposition and the main points we are working for is to give the actual transaction between the man and his cow to find out whether the cows are paying a profit. Besides weighing the milk, taking samples and doing the testing, it is this man's job also to weigh the feed and charge the cow up with it at the regular market price. After he has done that for twelve months he knows just how much each cow has produced in butterfat and milk, and he knows just how much it has cost the owner to keep those cows and how much profit each cow has made. He furnishes each man with a herd book, the testing dates and the figures. He does all this work and the owner has the book there to refer to each time after the tester leaves and he knows just where each cow stands. The value of such an association, I think, is readily seen. Especially two or three of the big points, and I am going to mention several of those and show you some of the results obtained in these associations, because I feel they are representative of what the average man is doing.

We are not especially interested in the specialized dairyman. The man we are working with is the average man, the one who is milking ten or fifteen cows and wants to make some money on them. In other words, we are trying to get better cows instead of more cows for Iowa, and if we are to lead in dairying, as I believe we will ultimately (we now stand third as a dairy state: Wisconsin first, New York second, and Iowa third), we will have to increase the productive value of our cows. The average production is 140 to 150 pounds. That is the average production of the cow in Iowa in butterfat. Figuring that at 30c a pound, gives an income of $42. It is pretty hard to say how much the average feed costs, but I know the average cost in our cow-testing associations, which include 5,500 cows, is $38, and by subtracting that from the $42 income, makes the profit $4 a cow for the year. Suppose your cow is milked twice a day for 300 days, or 600 milkings per year—how many of us can afford to milk a cow 600 times for $4? And I feel sorry for the fellow who is in the dairying business if he has that kind of cow. There is a chance to get a much better cow than this, and I believe I can back it up with figures that an average man can take the average herd of the state, just the common cows, and by the use of pure-bred sires, testing and selecting, in three to five years have a herd that will average 300 pounds of fat. I am going to put on the blackboard the record of a man from the Benson association near Cedar Falls. This man started in the dairy business about eleven years ago. He started testing in 1912. That year his herd averaged 207 pounds of butterfat and it cost him $43 a head to feed his cows. They turned him a profit of $22 after they had paid the feed bill. That is a pretty good average. It is above what you find in associations and in herds where no testing has been done. It is where a man has first-class cows, selecting them by the amount of milk they have been giving, that he begins to realize a profit from his knowledge of the dairy business. We find from experience that 200 pounds is about as high as a man can get with that kind of selection. At the end of 1912 this man culled from his herd all but the pure-bred cows, selling 30 per cent of his cows that year, and substituting heifers from his good cows, and the cow that he thought was the best cow was the very first one that he sold from his herd. He sold 30 per cent of his herd and the next year it averaged 252 pounds of butterfat, making a profit of $52 apiece at the end of that year. Again followed the same system of weeding out his poorer cows and at the end of the second year they averaged 339 pounds of butterfat, with a feed bill of $45, returning a net profit of $72. At the end of the third year, following the same system, they averaged 351 pounds. It cost him $52 for feed for his cows, and they returned a profit of $74 a head. You will notice that the cost of maintaining a cow is more when producing larger amounts of butterfat, but that man in four years increased the production of his herd 144 pounds to the cow. That is, they were producing that much more in 1916 than they were in 1912 when he started testing. I asked that man last winter how long it would have taken him to have gotten a 350 pound herd without having been in the cow-testing association, and he said he would never have gotten there; that he had been in the business for seven years before entering the association in 1912 and that was as high as he had gotten.

We sometimes are told that pure-bred cows "eat their heads off". It is true it costs more to keep a good cow than it does a poor one. It does cost more, just the same as it takes more leather to make a thousand pair of boots in a day than 500 pair; but the interesting thing about it is that it doesn't take twice as much feed as the poor one requires. Here is an example: there was an increase of $9 in the cost of feed in the last year over the first, but while our Danish friend was increasing the cost of feed $9 a cow, he got $52 more in net profits in return. Another interesting thing about this man's record is that he is living on a rented farm.

In our association work we find records such as this man has made, are common. Lots of these men are doing just as well and therefore I make the statement that you can take the average herd and increase the production up to 350 pounds in five years. This record makes a big difference in the selling price of cows. We have never had such a demand for grade dairy stuff as we have right now. Hardly a week passes but we have a large number of persons coming to us and asking for good stuff. We have noticed this, that men are coming to Iowa for cattle and they are paying more for the cow-testing association cows than any other kind. Two years ago we had a herd, up in the neighborhood of Waterloo, where they had been testing their cows for about three years, from which 34 head of grade stuff was sold that year, the stock ranging from calves to aged cows. The high cow at that sale brought in $139 and the average price for the herd was $131.50, the sale taking place early in the fall. We were interested to know how much more those men paid for this stuff than they ordinarily paid for untested cows in that vicinity and found that the best cow at farm sales—just ordinary cows—sold as good milch cows, and the best of them brought from $90 to $100. The average was something less than $90, so this price was an increase of 30 per cent. So we say the cow-testing association is responsible for the increase in sale price of from 20 per cent to 30 per cent.

We have an ideal in the livestock business, and we have an ideal to work for in the dairying business, and the quickest way to get at that ideal is thru the cow-testing association, whether you are in the pure-bred business or not. We find that the Cedar Valley Association now has a large proportion of pure-bred breeders in it and yet five or ten years ago there were but two or three pure-bred breeders there. In the Pioneer Association we have gone so far that every man has a pure-bred sire, and every man in that community has a silo, while some of them have three and some four silos. We find, too, in the association work that the feeding proposition is a big thing. Feed your cow a more economical ration and increase the production by feeding a good deal less feed than you were feeding previously. I think I can illustrate my point by what happened to one of the members in the Clinton Association. When the tester came around in December he found that the man was feeding a ration of ear corn weighing 8.9 pounds, oats 3 pounds, oil meal and bran 1.5 and cotton seed meal 1 pound, a total of 14.4 pounds a day, and the cows were giving about 25 pounds of milk. The tester asked him if he thought he couldn't cut down feed and get as much milk, so they made a grain mixture weighing 7:3 pounds on which they wanted to get as much milk as on the heavier feed, but the surprising thing about it was that when January came around it showed that every single cow in that herd increased in milk production. During January they gave 563 pounds of milk more than they had in December and made 28 pounds more of butterfat. In December it cost $80.60 to feed and in January $18.66 to feed them. In December he made a profit of $2.47 for the 10 cows—less than 25 cents apiece for taking care of those cows and milking them, and in January, instead of a profit of $2.47 he got a profit of $40.39, an increase for the month of nearly $39, turning loss into profit. The trouble was he was feeding too much grain, too much ear corn.

There are several other interesting things to come up. I have sketched this briefly and if there are any questions at any time, do not be afraid to ask them and I shall be glad to answer them.

QUESTION: What did he feed them in place of the corn?

MR. BARKER: He fed more oil meal and cotton seed meal. He made a mixture of 200 pounds of corn and cob meal, 100 pounds of oats, 150 pounds of oil meal and 200 pounds of cotton seed meal, and he fed them according to the milk the cows were giving, a pound of this mixture to every three or four pounds of milk.

Q. What rough feed did he feed them

A. Silage and mixed hay.

Q. A pound of grain to 3 pounds of milk?

A. Yes.

Q. You said that he increased the price of his cows; you said the selling price ran up to $90 or such matter.

A. The increase in that cost was about 70 per cent. The man up in the Cedar Falls Association got an increase so that his average was $131.50.

Q. Didn't you forget one fact, that the testing association cows wouldn't have increased so much in selling price without at the same time increasing the sale value of the neighbor's cows?

A. Yes; that is very likely true. Other cows sold higher because of the cow-testing association, so that it would count much more than the 33 per cent.

Q. How do you figure the cost of pasture?

A. Different ways in different communities. It depends upon what the man is doing. For instance: In renting pasture it costs $1.50 a month for pasture. If the man owns land it ought to carry a fair rent on his land whether that be a dollar or any other sum. The charge in the association is from $1.25 up to as high as $2.50 a month for a cow. It depends upon the community.

Q. Why shouldn't it be $3 a month? That is 10 cents a day for feeding the cow in the summer time.

A. $2.50 is cheap, especially for some pastures where they have right good pasture.

Q. Our neighbor charges 10 cents a day for pasturing a cow and I think it is cheap.

A. It is for summer when the pasture is good, but along in July and August when the pastures are dry it is not worth so much.

Q. How did you get around the time in testing those cows? They don't milk 12 months.

A. That is a good question and that is the purpose of the cow-testing association. We charge the cow when she is dry just the same as when she is giving milk, because if a cow is dry six months in the year she ought to give enough milk in the six months she is producing to pay for the feed bill and still make a profit.

Q. You don't figure the increase in the calf?

A. No; the main object in the cow-testing association is to cut out the poor cows and give you a chance to select and breed up your herd. If you figure the calf it will make it run up much higher.

Now, the main thing I am here for today, according to the program, is to say something about the fair exhibits. I think probably most of you men saw the exhibits that we had at the fair grounds last year in the cow-testing exhibition. Those of you who saw it will agree with me, I think, that we had a lesson with those cows that was well worth the while of anybody and we also had some big surprises. It is a surprising thing, when you get out among the men, in organizing associations, to find out how many men actually think they can tell their good cows and that they don't need to test them. In organization work it is not uncommon for some men to tell us: "I have been milking for twenty-five or thirty years and I know my good cows; I don't have to have anybody come around and tell me how to do this." So we have made it a point on the first trip to a new member of the association to find out which cow he thinks is his best one and which he thinks is his poorest one, and we have never found a man who knew them both. Many times cows that seem to be best are found to be down at the end of the line after the test. We had a man in Cerro Gordo county who had a cow in his herd that he offered to sell for $25, because he considered she was no good. He couldn't sell her because everybody else thought she was as poor as he thought her, but at the end of the year that cow he considered the poorest made more butterfat than any other cow in his herd. He kept that cow and he has several times since refused $100 for her.

I hope that during the coming year it will be possible for us to put another exhibit on here at the state fair, because I believe that it is a great thing from the standpoint of the dairy business. The cow-testing association is the foundation of the dairy business in Iowa and the more associations we get the more good cows we are going to have. The more profit we make on our cows the more we will popularize dairying. Men will hear there is money in it and they will have less trouble with the labor proposition. And it is now realized, in connection with the dairy business, that when a man starts testing his cows, he soon knows whether every cow in the herd is paying a profit, and it is a very easy matter to convince him that there is something to selection of cows. When he realizes that, it is an easy matter to increase the production of a cow, especially when he knows what her ancestors are doing, what he is paying for food, and what the pure-bred bull is doing in the herd.

I think down in Clinton county we have one of the best examples of this increased production in using common cows. We had a man who had been testing for three years before he went into the association. He started five years ago in the dairy business with just a herd of common cows and he started with a pure-bred dairy bull. He has just one of his original cows now and is milking twenty-two, all of them are grades by this bull. The original cow made 345 pounds of fat. He has also four daughters of this original cow in his herd and keeps a record on all of them. One of them as a three-year old made 490 pounds of fat; he has another one that made as a three-year old 317 pounds of fat; he has another one that made 289 pounds of fat, and all of them are two or three-year old records. Then he has a two-year old heifer that in six months produced 190 pounds of butterfat, which would indicate that this heifer will make better than 300 pounds of butterfat during her first lactation period. And there you can see the big increase in production on that one cow alone, due largely, of course, to better methods in feeding, but especially due to this pure-bred bull that he used in his herd.

Q. How many months do you allow a cow to give milk in a year?

A. A cow ought to give milk ten months. We figure a cow ought to be dry six or eight weeks. I like to see the heifer bred to freshen at twenty-four to twenty-six months, and then have them come fresh annually thereafter. The annual lactation period in a cow depends upon habit. If you start a two-year old heifer by milking her about for ten or twelve months and then have her come fresh, she will always want to dry up at the same time, but a cow ought to give milk at least ten months.

Q. You think two months sufficient time to have them dry before the calf comes?

A. Yes, I think so.

Q. But the amount of feed consumed during that period is the same and the cow gives no milk. In making your estimate of the cost do you count those two months in also?

A. Yes sir; the twelve months is the cost of feeding.

Q. If a farmer had pure-bred dairy cows, would the advanced registry admit them on those records?

A. No; only most of our associations now will allow the cow-testing association tester to do the advanced registry work. The Holstein-Fresian association asks that every third test be made by another man, but the Jersey and the Guernsey will allow the regular man to do the work all the way thru.

Q. What breed of bull did this man have with the cows?

This man had a Guernsey bull.

In arriving at the value of the profit that those cows made, what disposition do you make of the butterfat?

A. Whatever amount he is getting, wherever he is selling his product.

Q. I live where there is a cheese factory, a creamery and a condensory, and can sell to either place. As a rule don't you figure the butter price on your estimates?

A. No; we try to get the actual transaction between the man and his cows. So if I am selling my cream to a creamery or you are selling yours to the cheese factory and somebody else to a condensory, what we want to know is, how much you made under those conditions.

Q. As a rule the condensory pays a little more than the cheese factory.

A. The cows are given credit for the product at this price you are receiving. If you are going to make them comparable from the standpoint of profit, it might make a difference, but we figure that these men are not making the records for their neighbors but from the standpoint of profit, and whether the cows are making money for their owners. When any of these figures are used for the association we always figure them on the uniform basis, so far as butterfat is concerned.

The purpose of the cow-testing association is to give the owner some basis of selection so that he can find his good cows. If you are going to figure the profit on a calf, it will increase the profit on all of the cows, but to figure the calf complicates the thing and from the standpoint of the cow-testing association that is not the purpose.

Q. The purpose is to get the milk value?

A. Yes sir. The maximum production at the minimum cost, that is the thing we are working for in the association, and that is why these associations you have, in the twenty-four associations in Iowa, 53 per cent of the members are men who have high-producing dairy cattle. The associations are not dealing especially with the specialized dairymen, but men milking cows for profit.

Q. That man that fed too much corn—he was feeding ensilage at that time?

A. Yes sir.

Q. Didn't he get enough corn in the ensilage without feeding the other corn?

A. No; I don't think so, but as a general rule cows will keep in better condition if given corn, especially if they are giving from 25 to 30 pounds of milk. We saw a man last week who was in trouble with his cows; they were poor and going off in their milk flow, and we found that he was feeding nothing but ensilage and straw. Those cows had given as much milk as they could and had been getting poorer all the time and then went off in their milk flow because they couldn't get any more protein from their bodies and as a consequence they were in pretty bad condition.

Q. What would you do about full feed; give them ensilage and a little hay? What feeds would you give?

A. To cows in milking?

Q. Yes.

A. This winter, as I said, is going to be quite a problem what to feed our cows. For the average herd or the herd that is giving in the neighborhood of 15 or 20 pounds of milk, about all we can do is to keep those cows in the best possible condition and bring them thru the winter in good shape. Probably in that case a little bit of cotton-seed meal or distillers grain would help, and I believe that the price of oats, as compared with other grains this year, will justify us in feeding a little. To cows giving from 25 to 30 pounds of milk, we generally like to feed cotton-seed meal and ensilage.

Q. How about bran?

A. Bran is too expensive. I don't know what it is in your communities, but every place I have been I haven't seen it less than $26 a ton.

Q. It is $30 and $31 a ton in our community.

A. It is too expensive.

Q. What is cotton-seed and oil meal worth?

A. We are paying from $16 to $18. There is generally a difference in price of about $2, and if you can get cotton-seed meal that comes up to the test it is the cheapest, because you can get more digestible protein out of it than out of oil meal. What you have to look out for is low-test cotton-seed meal. We had some that tested 41 to 43 per cent and the same way with the rest of the constituents in the feed, so that made good feed for the price. We were offered some cotton-seed meal at a less price and on our request they sent us samples and instead of testing it it tested from 34 to 37 per cent and wasn't worth the price asked for it.

Q. What especial benefit would it be to a community to have one of those cow-testing associations that didn't have dairy cows? That is, had ordinary cows, some beef strain rather than dairy strain and yet are milking ordinary cows.

A. It depends upon what the men are doing. If they expect to milk ten or twelve cows and let calves run with the rest of them, they may as well milk ten or twelve good ones. There is an advantage to it if a man is interested in milking. If he is in the beef business primarily, he wouldn't be interested in testing.

Q. You have to have a scale in the barn where the milk is weighed, don't you?

A. Yes.

Q. Isn't it possible for a man to do his own testing?

A. Yes. In practically every community in which we organize, we find a man who is doing his own testing, but in the association you do that only once a month and it costs only $1.50 a year for each cow. The time thus put in pays you better than any other work you can do on your farm. A cow that will give a large amount of milk is much better than the one that will give a small amount, and it makes quite a lot of difference in the course of a year if you test and find out which is paying you a profit. It may be that the cow giving 3½ per cent butterfat is giving more in a year than the cow producing 5 per cent.

I am glad to see so much interest shown in the cow-testing association, work, and I predict that in five years we will have not less than 75 cow-testing associations in this state. If any of you are from communities where you are considering organizing, we will be mighty glad to co-operate with you. It will cost you nothing but some effort, and if you have any chance of getting an exhibit of the cow-testing association at your county fair put on properly, there will be nothing that will do more for the dairying industry in your community than that, and I hope that this year at the state fair we will have a chance to bring some more cows together and carry this on just a step farther and show some of the benefits we are deriving from our cow-testing association work.

A TRIP TO THE ARGENTINE.

BY DEAN C. F. CURTISS, AMES.

We have some good neighbors south of us on the other side of the equator that we don't know very much about. At the outside there are a good many people who don't know just where South America is or what it is. You don't realize that if you draw a line straight north and south from New York City it would parallel the west coast of South America instead of the east coast, as many imagine, and then the great extent of the country is east of that line. In going down the east coast of South America, particularly in times such as we have had during the past two years when travel was a bit uncertain and submarine boats likely to make their appearance, you travel very far eastward out of the ordinary course. The boats don't always follow the same route, and in our trip south we found ourselves at one time nearer the coast of Africa than South America and then coming back to the southern part of South America. In traveling south in making a trip to South America, the first agriculture that you see is naturally the agriculture of the tropics. In fact, it is not very much of what we would call agriculture. They naturally have very mild weather the year around, and the growing season is twelve months, which, together with the abundant rainfall, results in very luxuriant vegetation. One of the first things to strike the eye is that the high mountains are covered almost to the topmost point with a tree and vegetable growth so dense that you couldn't go thru it without chopping your way. You might think that such luxuriance would prevail only in places, but the conditions are such that this luxuriant growth is every place. It seems that Nature has done so much for that country that there would be every advantage for the inhabitants, but on the other hand there are many disadvantages that don't appear to the casual observer.

As a rule, plant diseases and insects are equal in their destruction, and then, further, conditions are not adapted to the ordinary grain crops as grown in the temperate zones, nor to the same kinds of animals. The domestic animals we are raising here are much the same as may be found in temperate zones elsewhere, but they do not thrive well in the tropics. The production is fruit principally—bananas and other tropical fruits—and the production has reached such proportions that one of our steamship companies has over $100,000,000 invested along the South and Central American coast in this industry. The tobacco industry is also one of the great developments, and is carried on on a great scale in the tropics. The tropics are intensely interesting to us and I think have a fascination to most people. People who go down there to live, after they have lived there a few years, are not content to live anywhere else.

In going to the Argentine, the first landing is usually off the east coast. Our first landing at this time was Bahia (or San Salvador), from which the great tobacco section of South America is reached. There is not very much agriculture there, and they have very little of anything except the native tropical growths and fruits. Further toward the interior we find the development of the sugar industry, and still further in the tobacco industry. When you get to Rio do Janeiro you will notice the varieties of agriculture are changing somewhat, but they are still different from what we find in the temperate zones.

In the first place, there are very few white people living in tropical regions. You are sure to notice that. The tropics are the black man's country. The Negro races, or the dark-skinned races, have to be depended upon almost entirely for the manual labor in that country, and it is probable that that will always be the case. While the white people will go in and have charge of the large enterprises, the actual labor in industry and agriculture is done by the colored man, and principally for that reason there is not so much industrial progress in the tropics as in the temperate zones.

Rio de Janeiro is one of the most beautiful cities in the world. In its natural setting it probably has no superior. Nature has done more for it in the way of scenic beauty that any other place in the civilized world. For a number of years it was a backward city and decidedly unhealthful, but they adopted sanitary and up-to-date methods and it is now a wonderful city in which to live, except in the hot summer months, and during that period the people of means get out into the mountains or higher elevations. Around the bay they have made a beautiful boulevard, and instead of it being the back door of the city it is the front door. They have developed broad, clean streets and built good public buildings. Among other things they have a million dollar grand opera house. In fact, they have a grand opera house of that kind in nearly all of the leading cities. It is a municipal enterprise, and one thing that the city does is to give good entertainment for the people. They are a music-loving people and because the municipalities provide beautiful opera houses the prices charged are so moderate that all of the people can attend.

Around Rio de Janeiro is situated the coffee country principally, fruits and tobacco to some extent, also cattle and grazing-land. When you get down in that region you find quite a good deal of live stock. Farther to the north there is not much live stock owing to the climate, but toward the southern part of the tropics you find live stock improving in size and quality. Heretofore Brazil has not been looked upon as very much of a stock-producing country, and in all probability in the near future will come to the front as one of the nations producing a great surplus of beef. They have about 22,000,000 cattle there now; they have pasturing areas of enormous size, with many of them still untouched, and it is all good grazing land. That is, they are good grazing lands for that region, not the kind we are accustomed to in this country. However, they consider it very good for grazing.

They have one variety of godula grass for producing fat which is native of that country, altho originally it was not found to a large extent. It has been cultivated and developed very considerably and they are now putting that in, and while it is an exceedingly rank-growing grass, it puts cattle in very good shape. However, the best results come from it when it is pastured. It produces good fat cattle. They bring cattle in from the remote regions and pasture them for a few months on that grass, and it puts them in condition for the market. Their stock wouldn't improve in this country. The only improvement is that which would come from the Hindoo blood to the native stock which they have bred up from the Caribou and the result is a breed of rough, angular cattle.

Three or four years ago the first packing house was built and last year the second. Prior to that time they had no means of marketing their stock except to dry the beef and put it on the market in the form of "jerked" beef. They would hang it for a long time tied on a fence, or on poles out in the sun, and dry it that way and then ship it to the sugar plantations where they used that product; but the packing houses have gone into their country and given great impetus to the cattle industry. They take most of the cattle coming from the good grass lands and after dressing them put them into refrigerators and ship them to the seaports, where they are loaded into refrigerated vessels going abroad and are sold on the foreign markets as Brazilian beef. The prices received are not such as paid for the beef in the United States or from Argentine, but compare very favorably, and with that incentive the buyers are introducing improved blood. Already they have improved the stock, and it is to be expected that in a short time they will have a great deal of well-bred stock there.

The worst enemies they have to contend with are insect pests, the same as we have in the southern states. One of the surprising features is that the cattle that have pastured thru the tick-infested areas in this country are not immune to the tick when taken down there, and the cattle taken from their tick-infested country are not immune when they are brought to this country. The tick is an insect that deposits its egg under the skin of the animal, then developing into a grub, and it is the source of a great deal of annoyance to the cattle as well as bad for the hide. These cattle are being improved on a large scale. The greatest improvement is being made by Mr. McKenzie, who has what is probably the largest cattle ranch in the world. His company has over 6,000,000 acres of land under lease in that country and 225,000 cattle, which are developed economically because the land is cheap and because there is such a mild climate, consequently no losses are suffered from exposure. The losses that come heaviest is the calf crop, but when the calf crop is in they can market from 90 to 95 per cent of the cattle they raise.

Sao Paulo is the headquarters of the Brazilian Packing House Company. It is just on the dividing line between the tropics and the temperate zone. When you get south of that you get into the temperate region and the conditions gradually change until you get more nearly those of this climate here, but with a milder winter at Buenos Aires. However, the country covers such a wide longitude that when you get down into Patagonia you find it rather bleak, with winters almost, if not more severe than the country here, and more exposed to the raw winds of the sea.

Argentine is a great cattle- and corn-producing country. The Argentine and Brazil constitute about two-thirds of the area of South America. The Argentine republic is about two-thirds the size of the United States and extends from the tropics 3000 miles south almost to Cape Horn. The central portion of the Argentine, or that portion known as the La Plata valley, is a rich, level plain extending north and south 1000 miles and with an average width of from 200 to 400 miles. A large portion of that is level and is a rich, deep black soil which is exceedingly productive. It is soil that in richness and productiveness compares more nearly to the soil of our western slope or the Missouri valley than any soil in this state. It has naturally a rather better drainage than the Missouri valley had originally before we adopted the system of putting in ditches and tile drains. It is a little more rolling than that. There is a railroad extending out of Buenos Aires that runs fifty-four miles without a curve. That is one country that appeals to the cattle man and it appeals to the farmer who loves a rich soil. You cannot help being impressed with the richness and resources of such a country. The Argentine is not all of that character, however, but all that along the La Plata river is of that kind. The valleys there are wider than anything you see in this country. We were particularly impressed as we went up the bay at the extent and magnitude of that river. We arrived in the city of Buenos Aires about noon. When we came on deck that morning we all noticed that the water was muddy, yet there was no land in sight at that time, and the remark was frequently heard that we had never before seen the ocean so muddy. One of the officers replied, "Why, we have been in the river since midnight, it is 150 miles wide here." The width of the level land adjoining the river is in that proportion also, for it extends back for hundreds of miles on either side. Then as you go farther south you find more rolling land, more like our rolling blue-grass pasture of Iowa, and this central section is principally a grazing country. They say it is the cattle man's country: that the cattlemen own the country; that the cattlemen possess the wealth of that country; that they elect the legislatures and make the laws, and to a large extent that is true.

The city of Buenos Aires and the wealth of that city is largely in the hands of the cattlemen, and great fortunes have been made from sheep and cattle and lands. They have no great enterprise except the cattle business; they have not developed their mines and their lumber; they have not developed anything yet except their agriculture, so that it is primarily, and until recently has been, almost exclusively a grazing country. The pioneers went into that country and developed stock—it was an open country at that time and then began to fence it and make great pastures. Later they brought in American engineers to put up great reservoirs which they called "watering tanks" which they draw upon when they want to water their stock. The cattle are kept out in this open pasture the year round, the calves are dropped there, they are fattened on those pastures and remain right there until they go to market.

Yesterday some Argentine gentlemen were at Ames. They were asking about our methods of finishing cattle for market; how much we would feed to get a thousand-pound steer ready to go to market; what we would feed to put him in shape before we were ready to call him in marketable condition. I told them fifteen pounds of shelled corn a day, a couple of pounds of oil meal, perhaps twenty-five or thirty pounds of silage, and from three to five pounds of clover and alfalfa hay. When I got through Mr. Dugan said: "That is very interesting, but we feed them nothing", and that is absolutely true. They simply stay out in the pastures where they were born and fed nothing except what was found in those pastures. When they go to market they go in prime condition. You may wonder what kind of cattle they produce under such conditions, and you would be surprised at their excellence. For fifteen or twenty years they have used the very best sires they could breed and their herds have been improved by the best stock they could get from Great Britain, so those cattle are more highly bred than we find anywhere through our farming sections, and the only place we find anything better is on our best conducted ranches where they have pure-bred herds. A large part of this live stock is bred up to the highest state of perfection.

Their pastures are composed of two kinds of grasses in the main, of native grass somewhat similar to the native grass here, and the alfalfa pasture. Alfalfa is the great staple crop in that country. It has the largest area and the output is the largest of any single crop that they grow, notwithstanding the adaptation of that land to oats, hay, corn and other crops. Alfalfa is as high on the market there as it is here. The alfalfa stays right on the ground where it is grown; it goes to the market in the form of mutton, wool, beef and pork, so that it is a question of getting that land into producing alfalfa and keeping live stock upon it until it is ready for market. They have favorable conditions for producing beef in a country where they can do that and where they can graze twelve months in the year.

During the past season they have had the worst drouth they have experienced for years and their crops have suffered, so much so that during the coming season the wheat and corn crop, these gentlemen told me, will be practically a failure. That is, it will not produce any more than they will need for home consumption. Naturally the pastures suffered, but they suffered most where they were too heavily stocked. Where they had more pasture than they needed they got along in fine condition. The cattlemen were complaining of conditions while we were there, but we saw their herds coming through in fine condition, and they are suffering nothing like the loss we sometimes experience during our severe winters. Beef production there is comparatively a simple process, and you wonder why they do not produce more hogs. I think we have more hogs in Iowa than there is in the whole of South America, and for a country so well adapted to corn raising and alfalfa raising you wonder why it is that they have not gotten into swine production. The fact is they scarcely know themselves. I think the main reason is that the cattle and mutton-producing business has been so profitable they haven't cared for anything else. Another is that until the American packers went in there they did not have a market.

Mr. Finney, who represents Mr. Armour there, started a company for pork production and felt that he was quite successful, but at the outbreak of the European war the shipping space was so much curtailed they couldn't get ships to carry the stock out. Every foot of space that can be obtained on any of those vessels is chartered for shipping meat products, and still the packing houses can only be run at about half capacity. The American packers have improved their plants most within the past five or ten years, and this improvement has given a great stimulus to the live stock and meat producing industry of that country. There was a prejudice against them when they first went there; they were already under a monopoly with the packing houses they had then —a worse monopoly than they have had since—and strange as it may seem they feel very kindly toward the packers now. Prices have increased from 100 to 150 per cent since the packers have gone in there and they have a market for the cheaper animals which formerly they couldn't dispose of at all.

It is not very long ago, twenty or thirty years, that in some parts of the country they were killing and slaughtering those cattle for their hides, and the hides weren't worth very much, either. Now they are getting prices that compare favorably with prices that we are getting here, although they are not quite so high, but at that the prices are on a very profitable basis. Those men are cattlemen who appreciate the value of the packing industry. It is the great business of that whole country and naturally they take great interest in it and everything is done to make it profitable and make the conditions favorable for production. The corn industry has only come into existence in comparatively recent years, because originally this was a grazing and not a farming country. The farming is done in a very loose and haphazard way, and they have not given anything like the attention to the methods of cultivation that has been given to the improvement of their live stock. It has been taken up as incidental to the main business, and as prices have advanced they have put more and more under cultivation until agriculture is now assuming quite sizeable proportions. They put under cultivation some of this raw land for the purpose of raising a few crops and then put it into alfalfa and feed it to their cattle.

The output during the past ten years, from 1903 to 1913, is interesting. The export of corn during that time, in 1903 was 82,000,000 bushels, and in 1913 the export of corn was 189,000,000 bushels; wheat 19,000,000 bushels in 1903 and 103,000,000 bushels in 1913; of flax seed it was 22,000,000 bushels in 1903 and 49,000,000 bushels in 1913; oats 2,000,000 bushels in 1903 and 61,000,000 bushels in 1913. So you can see what a rapid increase there has been in the ten-year period. Then years previous to 1903 there was scarcely enough produced and exported to take into account, but if they continue to develop at the rate they are now going, there will be a very large export production of corn, wheat, oats and flax seed, but particularly corn, wheat and flax seed. Argentine has 1,200,000 tons of wheat in storage on account of lack of boat space, and that is only a part of their product. That will probably be increased, and increased quite rapidly. A large part of what they produce in the way of grain is exported because they have only a small population, so that probably four-fifths of the grain they produce will be available for export. That will continue to be the case for a number of years, until their population consumes much more than it does now. There are only 8,000,000 people in the entire Argentine Republic, with 1,800,000 of that number living in the city of Buenos Aires, leaving only about 6,000,000 people for the rest of the republic, so you can see that the city of Buenos Aires is the great cosmopolitan center not only of the Argentine but of the whole country.

While Rio de Janeiro and Sao Paulo are good cities, they are not in the same rank in importance with Buenos Aires. Sao Paulo is a great city and is spoken of as the coffee market of the world. And it is more than likely that we will always be dependent upon those people for our coffee. We are dependent upon the Argentine Republic for about all our wool now. They have something over $50,000,000 a year output, and on the basis of present prices it would be worth about $70,000,000 a year. That wool goes almost entirely to the United States and to Great Britain where it is manufactured and then goes back into that country in its fabricated form, for they are dependent almost entirely upon this country, Great Britain and other European countries for their manufactured supplies. Most of their agricultural machinery comes from the United States, most all their cement is imported from this country and Europe, and Buenos Aires is the great mercantile center and residence city in the country. People who own these great ranches do not live on them, they live in the city, and the same condition also prevails in Brazil with reference to Sao Paulo and Rio de Janeiro. There are a great many old mansions similar to the plantation mansions we had in the early days in the south, and these old mansions still exist, but they are used now as grain houses—storage houses, and the people congregate in the cities as they do here. The reason is that the lands are generally in the hands of the wealthy people. They are held in large acreages and the work of conducting these large holdings is in the hands of natives who operate them on a salary or percentage basis, while the managers are in touch with them just enough to see that they are getting satisfactory results.

Buenos Aires is a city that compares very favorably with the best cities in the United States, is modern in its convenience and improvements, and it has also a fine municipal theatre building costing over a million dollars. It has as fine a system of public school buildings as I have seen in any city anywhere; it has streets and parks and other improvements, and an underground railway that is said to be, and undoubtedly is, finer than the subway in New York. It covers a large area and that is probably the reason they put in the subway—it covers so much territory that transportation is quite a problem. They pride themselves on the civic improvements and the modern methods of city development. It is a city that compares very favorably with Paris and other of the European cities, more because of its characteristics than any that we have.

The question that should naturally concern us is what future lies in that country. A good many of our people are going down there. The banking interests in New York and other eastern cities have expanded in that direction and American capital is going in there much more rapidly during recent years than formerly. I met a young man last night who expects to leave in January to establish the first cement plant in that country, for they have been importing Iowa cement heretofore. They have all of the raw material and this will be the first American plant going in there. American capital is going into their railroad enterprises and other concerns, and naturally their beef industry will develop, while pork producing and their wool and mutton industry will increase. Their dairy industry has increased of recent years and this past year they exported 8,000,000 tons of butter. The foreign trade of that country amounts to just about one billion dollars a year, as compared with six billion dollars of the foreign trade of our country, and their foreign trade has doubled in the past ten years. Their ocean shipping trade amounts to something over 900,000,000 tons annually and of that amount only 145,000,000 tons come to the United States, 575,000,000 tons going to northern Europe and the rest being scattered to Africa and southern parts of Europe and eastern points, so that you see we do not cut much of a figure thus far in the foreign trade of that country, notwithstanding the fact that we have been supplying them with considerable agricultural machinery and other manufactured products.

Conditions are undoubtedly more favorable than they have been in the past. The European war has brought about an increase in our exports to these countries because it has cut off some supplies that they had been getting from Europe, but there is no assurance that we will continue to hold that market unless we are able to hold it by force of the strongest competition that is found to develop there. There is no question but that the European manufacturers and merchants will come back strong and determined to get back that market. There are many reasons why there should be closer business relations with this country. There will be undoubtedly a surplus of many of our products for export, so looking upon this country as a market for their surplus meat products, we should be able to increase our exports and imports with that country, as the Argentine is the only country in the world that has a surplus of beef.

Brazil is coming to the front very rapidly in the development of its cattle industry and will have a surplus of beef, and those two countries are going to be looked to in years to come to furnish the beef that is to be needed by other nations in excess of what they produce. They think they will send some of this beef to help in feeding our hundreds of millions of people, and they probably will. They will undoubtedly buy pure-bred live stock of us, but that will not be a large item, as the pure-bred live stock that has been going in there has been sent from Great Britain. They will help the conditions here in the breeding industry to some extent, but we must bear this in mind, it is not a market for unloading our cull or inferior stock; only animals of the highest excellence that we can produce will be acceptable, and for that class of stock there will be a demand. Those people are naturally in a friendly attitude toward the people of this country. The pioneer development and the gaining of their independence was under much the same conditions as the United States. They have modeled their constitution largely after the constitution of the United States, and the two peoples have much in common. It is strange that up to this time we have had so little to do with one another and that we know so little of one another, but the chances are that there will be an increased trade and that it may be of mutual advantage to both countries.

The gentlemen who have been up here recently attending the International Live Stock Exposition and who have seen a great many of the conditions of this country, are particularly pleased, I think, at the excellence of the live stock and with our educational system. They are adopting the educational methods of this country to a large extent and there is every reason to believe that these relations are friendly and the basis of mutual advantage will continue. We should therefore cultivate the acquaintance of those people and endeavor to establish closer trade relations with them, and I believe they will be good buyers of our manufactured products. They have a great deal of admiration for the genius and the enterprise, and particularly the manufacturing ability, of the United States, and they are going to expect a good many of our men to come down there in the future and help them in their manufacturing enterprises. Probably when we get back to normal conditions and boat space is restored upon the seas to its former normal capacity there will be a very large exchange of products. We will get from them raw material in the main and in turn will send to them our manufactured products.

THE STATE'S PART IN AGRICULTURAL ACTIVITIES.

BY C. P. NORGORD, COMMISSIONER OF AGRICULTURE, WISCONSIN.

My subject today is "The State's Part in Agricultural Activities." I have had the pleasure of talking to a good many farmer audiences in various agricultural communities, representing the state, and very often I find that the absence of horny hands and the presence of a crease in my trousers, the cut of my clothes, and too high a collar, take up a little too much of the attention of my audience, and they do not always believe what I have to say. Perhaps I ought to come with a pair of overalls on in order to make it appear that I had once taken hold of a fork handle.

A young man was at one time addressing farmers along these lines, fixed up in all the spangles worn by a young man just from the schools, and his word was doubted by the farmers as they looked him over, and one of them said: "You fellow with the crease in your pants and the soft hands and the high collar; do you really know anything about dairying and the subject you are talking about? Suppose we were to turn you over in charge of our stock, would you be able to pick out the calf that would make the best cow?" "Oh yes, certainly I could," said the young man, "I would pick out the heifer calf." So that there are things we can learn from unexpected sources and the man who is not willing to learn from different sources, it may be is not the most progressive man. We have a government that we know as a democracy and we all feel that we have the greatest possible liberty. We own our own lands; we have our own private business and enjoy our private rights, and it is well that it is so. It is a good thing to live in the land of liberty and the land of the free, and it is only because of the individual right that we have the greatest incentive to invention and all kinds of improvements. We are living in a fine land and living in the midst of great opportunities, and yet the opportunities have not met all of the conditions in this country as well as we might have met them. We hear it said that we are the greatest soil robbers on the face of the earth, and yet rather resent that statement, but the fact, nevertheless, is that we have had so much free land where we can always go and get a new farm after we have worn out the one we are on, that it has led us to be extravagant and wasteful with regard to the opportunities and the fertility of the land. But two centuries ago the fertile soils of Virginia produced immense crops of tobacco, forming the most staple article of commerce with England. Today, and for many years past, this rich soil has become an ash heap hardly able to cover itself with vegetation without the aid of commercial fertilizer. Likewise the alluvial plains of the south have been reduced in their power to produce cotton from one and a quarter to less than a quarter bale to the acre. Even the black corn lands of Illinois and Iowa, and the great wheat prairies of Minnesota and the Dakotas, have reduced their output per acre more than one-half. The deposit of miles of our best top soils annually at the mouth of the Mississippi speaks of the fearful erosion swiftly washing away the richest part of our soils inch by inch.

The destruction of organic matter and the removal of fertility elements by single cropping, taking crops from the soil without returning anything to it, is rapidly depleting the bank account of the farmers with the soil. The introduction of crop pests and animal diseases is annually reducing the power of our plants and animals to produce for us. In these later years our people have awakened to the danger of such losses and have taken steps to check them. Out of this movement has arisen the United States Department of Agriculture, the state experiment stations and the state departments of agriculture. These form a gigantic state agency for the improvement of agriculture such as the world has never before witnessed. The sum of money spent annually by this agency would make the gold of a Midas and a Croesus look like a speck as compared with the volume of the earth. As a result of this agency, single crop systems are being replaced by diversified farming and balanced systems of crop rotation returning to the soil more than the crop takes away and still producing a bigger crop and larger profits for the farmer. Low producing and unprofitable animals and plants are replaced by pure-bread, high producers through the magic wand of plant and animal breeding. Crop and animal pests are discovered, set against each other, and destroyed before they get a foothold.

EDUCATIONAL ACTIVITIES.

Our educators have at last awakened to the necessity of teaching in schools that which the learner must use in his daily life to gain his livelihood and to make his life richer. Hence, great vocational school systems have been built up. Agriculture has benefited particularly along this line.

The colleges of agriculture and agricultural schools of the land are presenting wonderfully practical and effective agricultural courses and sending forth young men and young women trained to the greatest efficiency for the farm.

THE MISSION OF FAIRS EDUCATIONAL.

The fairs—state, county and district—are state educational agencies intended to improve agriculture. They should be made of the greatest possible educational value. They should co-operate with every agency in the state which is setting forth higher ideals. They should particularly set forth the ideals of plants and animals that the state experiment station has developed and found to be most productive and profitable. Not all of our fairs are doing this. Instead of placing the premiums on the relatively few varieties of pure-bred types of grain, garden products and potatoes, many of our fairs are placing their premiums upon innumerable names, duplicates upon the same variety made over night by ambitious salesmen on varieties that are mixed and inferior in value. Instead of giving the money to pure bred animals and for the highest producing power, encouraging the production of certain classes and types distinctive in each community, scrub animals and inferior types are given the prizes. Instead of using for judges trained men who know the types that should receive the rewards, judges are selected without careful consideration.

The fair is our greatest and most effective agency for educating the masses. It reaches by far the largest number of all classes and ages of people. It impresses the ideal of types by actual illustrations in the form of great prize winners, the best to be found. It impresses this ideal upon the learner by sight, by sound and by touch.

The state fair should lead all other fairs in the state by setting a good example along all these lines. Its premium list should be the model for the smaller fairs of the state.

CLEAN FAIRS.

There has been growing up among our fairs in recent years a laxity in morals, and the shady side-show has been permitted to develop. The demand for this type of shows has become so great that the showmen have ceased building up the more instructive and cleaner types of shows. One of our larger fairs the past year endeavored to secure instructive as well as entertaining shows and made inquiry among showmen, but such shows were difficult to find. When asked why not more of this type of shows were built up, the answer was, "Create the demand and we shall produce the shows." We need to improve materially along this line, and our state fairs must set the example and take the lead in this as in other lines.

FAIRS OF THE STATE CO-OPERATING EDUCATIONAL UNIT.

The fairs of the state should be a unit. The educational institutions of the state should co-operate, and hence, the state fair, the county and district fairs, the state experiment station, the college of agriculture, and the best farmers of the state, should all co-operate that our system of fairs may be built upon the right idea that they may stand together, each supporting the other, to make the greatest possible educational and clean entertainment system in the country. Such co-operation has been fostered in Wisconsin. The Wisconsin State Fair the past year did away with all of the questionable shows which in previous years has given it a bad name and spoiled its good influence. It is thus able to lead the way to improvement along this line and to suggest and ask that the other fairs in the state receiving state aid shall clean up in like manner.

A splendid co-operation has been developed between county and district fairs as a result of which the Department of Agriculture was asked to submit a standard and modern premium list to these fairs in time so that it might be copied and made the basis of premium lists in the county and state fairs. This premium list was made up by the Department of Agriculture in conference with specialists upon each line of exhibits and with the advice of the best farmers and farmers' associations. It embodied in its schedules the best ideals of the day.

AGRICULTURAL ACTIVITIES SHOULD BE PROPERLY ORGANIZED.

The support of the vast agricultural experiment and educational systems of the nation and state involves the expenditure of immense sums of money. The organization of so vast a system should be most carefully scrutinized and the field work planned and supervised with greatest care in order that there may be no duplication, useless expenditure and friction. It is to be regretted that illustrations of such duplication are all too frequent both in the nation and within the states themselves. Too often the work within the state is duplicated by the federal work; too often there is friction because of this. All too frequently the state departments are duplicating the work of the experiment station, the college of agriculture, or the extension departments of the same. Quite frequently do we find the college issuing a bulletin on a certain subject and the department of agriculture following or preceding with a duplicate. It is time that such duplication of work be discontinued. This is the age of efficiency, economy, organization and co-operation. There is sufficient work for all departments to do within their respective fields. It is important that the field of each be properly outlined and that each adhere to the field thus laid out.

WISCONSIN ORGANIZATION.

In Wisconsin the State Department of Agriculture was organized by the last legislature. It has been the purpose of those in charge of the organization of agricultural work in the state to see that this new department shall be organized in such a manner as to prevent duplication of work and expenditure and consequent friction. Through the co-operation of the dean and director of the experiment station and the college of agriculture and the commissioner of agriculture, by the order of the governor of the state, a careful study of the situation has been made and a division of the field work carefully mapped out. The college of agriculture and experiment station have been given the entire experiment and teaching field and to the Department of Agriculture was given the field of control and regulatory work with the police power. This division of work and organization is proving most effective and desirable to all concerned. Regulatory and policing work breaks in upon teaching and research work, causing loss of time and an irritation to the person responsible for both, thus resulting in imperfect and unsatisfactory work along both lines. Where all of the regulatory work is grouped in one department whose officials have no other lines of work, the men in charge can be selected for this special type of work. Moreover, continual practice in the control work develops a certain type of individual peculiarly adapted to this kind of work. There is no part of the activities of the state in behalf of agriculture more important than the regulatory and police work, and none which should be more carefully organized and administered by honest, well-trained men, guarded from partisan influence, and backed up by the authority of the state.

REGULATIONS FOR STABILITY AND PERMANENCE.

The law of the state of Wisconsin establishing the Department of Agriculture provides as qualifications for the head of this department that he shall be trained by an agricultural education and by practical experience as a specialist in agriculture. His term of office is made as long as possible in order to protect the office from political influence due to changes in administration. This selection and protection of the head of the department insures the selection of a trained man for commissioner, and through him trained men for every division and line of work within the department, it insures the maximum efficiency, the minimum political interference with those in charge of each line of work, and the greatest possible permanency in all positions within the department.

ACTIVITIES OF THE DEPARTMENT OF AGRICULTURE.

A study of the lines of work of various departments of agriculture throughout the United States reveals great variation, both as to the lines of activity and the underlying policy and field of work. Adhering to the field of control work, the following lines of work should be found in an up-to-date agricultural department:

(1) *Marketing.* What should be included under this division seems at present uncertain, yet there is no doubt that a great need lies along this line. In some states, as, for instance, New York, this division issues licenses to commission firms and thus protects the farmer who deal directly with such firms. Commission merchants doing interstate business, would, however, be little subject to this control. There is also a need of an office for the appeal on the part of farmers where grievances concerning rates or methods of dealing could be looked into.

(2) *Dairy and Food Division.* The field of work included in this division is so well known that it requires no explanation. The Wisconsin Dairy and Food Commission has during the past year carried forward a particularly valuable type of work in the inspection of creamery and cheese factories and the issuances of licenses to the operators of the

same. As a result the standards of cleanliness and methods of work have greatly improved, and has also the products of the creameries and cheese factories of this state.

(3) *Weights and Measures.*

(4) *Agricultural Statistics.*

(5) *Labor.* This division offers great opportunity in elevating the labor situation on the farms and at the same time securing labor for those who have drifted from the farm to the city, and who wish to return to their early field of activity.

(6) *Veterinary and Live Stock Sanitary Work.*

(7) *Entomology* (including Orchards, Nursery, Fungicide and Insecticide Inspection).

(8) *Apiary Inspection.*

(9) *Stallion Registration.*

(10) *Seed Inspection.*

(11) *Pathological Inspection.*

(12) *The Fairs.*

(13) *Farmers' Institutes.*

The latter two do not come strictly under control work. Nevertheless, there is some reason for including these under the departments of agriculture. The state fair work has always been under boards of agriculture and is moreover too large an activity to be included under the educational work conducted by the state college of agriculture. There may be less justification for including the farmers' institute; however, the control work should be enforced in connection with educational work throughout the state in acquainting the people with the laws and regulations, their needs and advantages. In such work the farmers institute would be of great value. However, it is most likely that the farmers institute should give opportunity for the state departments to handle their educational control work as well as to carry forward the extension work of the college of agriculture under some co-operative arrangement.

IMPORTANCE OF CONTROL WORK.

There is no part of the activities of the state in behalf of agriculture more important and evolving greater financial responsibilities and advantages than the control work. A few examples will illustrate:

(1) *Nursery and Orchard Inspection.* In this work we encounter the San Jose scale. This disease was introduced from China and possibly elsewhere, the average cost to the eastern states of controlling this disease runs very close to ten million dollars a year. We also meet the gypsy and brown tail moth. This insect was introduced into one of the eastern states for experimental purposes for the purpose of improving the race of silk worms by cross-breeding. Accidentally a glass containing these worms was spilled out of the window, immediate action was taken to locate and destroy all of the insects that escaped, but a few remained and as a result a disease of fruit trees was started in the east which costs the state of Massachusetts one million dollars annually for its control. Every city in the west, as well as in the east, has had ample evidence of the losses due to the cotton maple scale in the loss of splendid shade

trees, the growth of years. Likewise also have we had the experience of losing our total annual production of grains from the army worm and our corn crops from the ravages of the wire worm and white grub. Recently Wisconsin and Minnesota have discovered the pine blister rust, a disease which has destroyed all white pine in large sections of Germany and Great Britain. Already this disease has advanced so far in the eastern states, including Massachusetts, Vermont, New Hampshire and parts of New York, that it is doubtful whether it ever can be eradicated from these states. This disease is threatening the immense white pine forests of the west and Canada, commencing with northern Minnesota. Wisconsin and Minnesota must form the barrier to protect, not only their own borders and make possible the continuance of the growth of white pine within their borders, but must also set an effective check to keep the disease out of these great forests of the northwest.

(2) *Veterinary Inspection—the Foot and Mouth Disease.* The very names reminds us of recent great clouds of danger hovering over our cattle industry. Great was the responsibility placed upon our state veterinarians and the National Bureau of Animal Industry, but nobly was the work performed. Our borders are free from this disease, thanks to the effective policy pursued, yet Denmark, Germany, and the Argentine are still suffering tremendous losses from the disease, and in many instances they despair of its eradication. Our policy was effective, yet it cost the state of Wisconsin seventy thousand dollars for indemnity funds alone, not to speak of the losses to the cattle trade. The disease cost the state of Illinois over two million dollars.

Tuberculosis—The White Plague. We now know that this disease in the bovine type is the direct cause of the disease in man. Not to mention the financial phase of this disease, we cannot help for this one reason alone but appreciate the tremendous importance of its control. The state of Wisconsin has the past year adopted an aggressive policy, looking toward the complete eradication of this disease. A large number of state accredited herds tested yearly by the veterinarians of the state department has been established. Arrangements have been made with nearly all of the states in the Union for admitting animals from these herds into such states without the necessity of a test just previous to shipment. This policy is also being pursued by Illinois and Minnesota. At the national meeting of the Live Stock Sanitary Board at Chicago, this policy was adopted as a national policy. Mention should also be made of the tremendous losses from hog cholera; contagious abortion among cattle, glanders and many other destructive diseases, the control and eradication of which lie entirely in the field of work of the departments of agriculture.

(3) *Seed Inspection.* When we remember that the only weeds natural to this country are those found in the forest, that the rest of the tremendous number of varieties of weeds found in every field have been introduced from foreign countries, we begin to realize how important is the work of this department. Mention should also be made of the stallion registration, by means of which we eliminate the scrub stallion,

thus advancing the breeding work among our horses. A further line of great importance to some of our newer states is the immigration work, which also is a control line, regulating the type of settlers to make the future citizens of our states and protecting them from the imposition of unscrupulous land dealers.

An important feature of the control work in the central and western states is the fact that these diseases, particularly those pertaining to crops, have not reached the extreme stage that they have assumed in the eastern states. In most instances the only hope in these sections is to check the ravages of these diseases so that a reasonably full crop may be secured. It is most encouraging to know that we of the west do not need to assume that we cannot eradicate the diseases, but we can spend our money and put forth our efforts looking toward a complete eradication and an entire removal of these dangerous and destructive diseases from our boundaries.

Indeed, the state has originated and assumed great and fundamental activities and responsibilities in connection with the improvement of agriculture. It is most important to agriculture that these be continued and extended. It should be a matter of great concern to all good citizens of the state to see that these important activities be properly organized and supervised in order that this great work of the state for the people may be done in such a way to secure for the people the greatest possible efficiency, economy and real service.

FINAL CROP SUMMARY FOR IOWA FOR YEAR 1916.

By Geo. M. Chappel.

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service, showing the average yield per acre and total yields of staple soil products, and the average price at the nearest station, December 1, 1916:

While the average and total yields of staple crops were not as great as in some of the previous years, on account of a market deficiency of moisture in June, July and August, the value exceeds that of any year in the history of the state. The total value this year is $597,165,673, or $188,898,770 more than the value of the 1915 crop, and $213,830-361 more than the average of the last ten years. This report does not include or take into consideration live stock, poultry or dairy products.

Corn.—Cool weather during May and June retarded the early growth of corn, but this was balanced by the excessive heat in July and August. The lack of moisture during the earing period resulted in many barren stalks and imperfectly formed ears. With a normal amount of rainfall during July and August the yield would have been five to ten bushels more per acre. The weather during October and November was exceptionally favorable for drying out and gathering the crop, 93 per cent of which was in the cribs on December 1st. The area planted this year was 9,818,500 acres, and the average yield was

35.3 bushels per acre, making the total 346,193,200 bushels. The average price at the nearest station on December 1st was 81 cents, and the total value, $280,416,500.

Oats.—The estimated area harvested was 1,979,800 acres; average yield, thirty-seven bushels; total yield, 184,131,000 bushels; aggregate value at 49 cents per bushel, $90,224,190.

Spring Wheat.—Area harvested, 142,990 acres; average yield, 13.4 bushels per acre; total yield, 1,927,280 bushels; price per bushel, $1.54; total value, $2,969,011.

Winter Wheat.—The heavy sleet and ice storm in February seriously damaged winter wheat and completely ruined many fields, resulting in a great loss of acreage. The area harvested was 418,945; average yield per acre, 17.5 bushels, total yield, 7,858,900 bushels; average price, $1.58 per bushel; total value, $12,417,062.

Barley.—Average yield per acre, 30.7 bushels; total yield, 6,039,930 bushels; average price, 90 cents; total value, $5,435,937.

Rye.—Average yield, 22.8 bushels per acre; total yield, 1,270,590 bushels; farm price, $1.15; total value, $1,461,178.

Flax Seed.—Average yield, 10.3 bushels; total yield, 56,015 bushels; total value, at $2.06 per bushel, $115,390.

Timothy Seed.—Area harvested, 312,180, acres; average yield, 4.5 bushels; total yield, 1,404,810 bushels; total value, at $2.18 per bushel, $3,061,485.

Clover Seed.—Area harvested, 59,766 acres; average yield, 1.6 bushels; total yield, 95,625 bushels; value at $9.29 per bushel, $888,356.

Potatoes.—The yield was greatly reduced by the drouth in July, August and September, the average yield being 42.3 bushels; area harvested, 161,390 acres; total yield, 4,287,600; average price, $1.75; total value, $7,503,300.

Hay (tame).—Average yield, 1.8 tons per acre; total yield; 5,929,720 tons; average price, $9; total value, $53,367,480.

Hay (wild).—Average yield, 1.4 tons; total yield, 724,377 tons; average price, $7.89; total value, $5,715,334.

Alfalfa.—Area, 154,880 acres; average yield, 4.4 tons; total yield, 688,047 tons; average price, $11.71; total value, $8,057,030.

TABULATED CROP SUMMARY.

	Acres	Average Yield	Average Price	Total Yield	Total Price
Corn	9,818,500	35.3 bu.	$ .81	346,193,200	$280,416,500
Oats	4,979,800	37.0 "	.49	184,131,000	90,224,190
Spring wheat	142,990	13.4 "	1.54	1,927,280	2,968,011
Winter wheat	448,945	17.5 "	1.58	7,858,900	12,417,062
Barley	197,000	30.7 "	.90	6,039,930	5,435,937
Rye	55,745	22.8 "	1.15	1,270,590	1,461,178
Flax seed	5,445	10.3 "	2.06	56,015	115,390
Timothy seed	312,180	4.5 "	2.18	1,404,810	3,061,485
Clover seed	59,766	1.6 "	9.29	95,625	888,356
Potatoes	101,390	42.3 "	1.75	4,287,600	7,503,300
Hay (tame)	3,240,600	1.8 tons	9.00	5,929,720	53,367,480
Hay (wild)	507,497	1.4 "	7.89	724,377	5,715,334
Alfalfa	154,880	4.4 "	11.71	688,047	8,057,030

Pasture and grazing	Estimated	96,000,000
Ensilage	"	6,600,000
Sweet corn	"	500,000
Pop corn	"	234,420
Fruit crop	"	7,500,000
Garden truck	"	4,700,000
Miscellaneous	"	10,000,000
Total		$597,165,673
The value of soil products for 1915 was		$408,166,903

REPORT OF COMMITTEE ON CREDENTIALS.

The committee on credentials made the following report and moved its adoption, which motion was seconded and carried:

We, the undersigned Credential Committee, do hereby report the following list of delegates entitled to vote at the State Agricultural Convention, December 13, 1916.

H. L. PIKE,
G. H. WHITE,
RALPH SHERMAN,
Committee on Credentials.

DELEGATES ENTITLED TO VOTE AT THE STATE AGRICULTURAL CONVENTION AT DES MOINES, IOWA, DECEMBER 13, 1916.

FARMERS' INSTITUTES.

Appanoose County	G. A. McKenzie, Moulton
Appanoose County	C. A. Hornaday, Udell
Bremer County	J. H. Carstensen, Tripoli
Buena Vista County	C. A. Fulton, Storm Lake
Buena Vista County	Carl Christiansen, Newell
Butler County	L. Lucas, Greene
Calhoun County	Henry Parsons, Rockwell City
Cerro Gordo County	C. H. Barber, Mason City
Cherokee County	Olin Jones, Cherokee
Clinton County	D. L. Pascal, DeWitt
Davis County	V. G. Warner, Bloomfield
Des Moines County	W. S. Mathews, Danville
Henry County	W. B. Seeley, Mt. Pleasant
Jefferson County	L. M. Alexander, Fairfield
Johnson County	G. J. Roths, Kalona
Kossuth County	S. D. Quarton, Algona
Muscatine County	J. F. McClean, Wilton Junction
Page County	C. W. Kelly, Clarinda
Polk County	A. B. Lee, Mitchellville
Scott County	J. T. Hansen, Davenport
Shelby County	W. M. Bomberger, Harlan
Story County	H. E. Evenson, Roland
Union County	M. W. Keating, Afton
Warren County	Joe McCoy, Indianola

SHORT COURSES.

Franklin County	Thos. W. Purcell, Hampton
Madison County	T. J. Hudson, Winterset

COUNTY AND DISTRICT FAIRS.

Adair County Agricultural Society	J. M. Wilson, Menlo
Adams County Agricultural Fair	F. C. Reese, Corning
Benton County Agricultural Society	John W. Hanna, Vinton
Black Hawk Dairy Cattle Congress	E. S. Estel, Waterloo
Black Hawk-Cedar Valley Fair, Cedar Falls	H. S. Stanbery, Cedar Falls
Bremer County Fair	J. W. Bennett, Janesville
Buena Vista Agricultural Society	Roy H. Wilkinson, Alta
Calhoun County Fair Association, Manson.	C. G. Kaskey, Manson
Calhoun-Rockwell City Fair Association	F. M. Griffin, Manson
Cass County Fair Association	Carl E. Hoffman, Atlantic
Cedar County Fair Association	C. F. Simmermaker, Tipton
Cerro Gordo-North Iowa Fair, Mason City	J. H. McConologue, Mason City
Davis County Agricultural Society	H. C. Leach, Bloomfield
Clinton County Agricultural Society	G. H. Christensen, DeWitt
Guthrie County Agricultural Society	J. M. Jamieson, Casey
Henry County Agricultural Society	T. F. Campbell, Mt. Pleasant
Henry-Winfield Fair Association, Winfield	Theo. Russell, Winfield
Jasper County Agricultural Society	F. E. Meredith, Newton
Jefferson County Agricultural Society	Sanford Zeigler, Fairfield
Johnson County Agricultural and Mechanical Society	S. A. Hunter, Iowa City
Keokuk-What Cheer District Fair Association	R. H. Belford, What Cheer
Kossuth County Agricultural Association	E. A. Wolcott, Algona
Lee-West Point District Agricultural Society	John Walljasper, West Point
Lee County Fair and Agricultural Society	H. G. Kirchner, Donnellson
Lucas-Derby District Agricultural Society	D. A. McMains, Derby
Lyon County Fair and Agricultural Society	H. T. Hampe, Rock Rapids
Mahaska-Southern Iowa Fair and Exposition	H. H. Rosebrook, Oskaloosa
Marion-Pella District Fair Association	Seth Way, Knoxville
Marshall-Eden District Agricultural Society	C. J. Buck, Rhodes
Marshall County Fair Association	W. M. Clark, Marshalltown
Mills County Agricultural Society	G. H. White, Malvern
Monona County Fair Association	N. W. McBeath, Whiting
Muscatine-Union District Agricultural Society	W. H. Shipman, West Liberty
Muscatine-Wilton Fair Association	C. C. Croxen, Atalissa
Page-Clarinda Fair Association	J. C. Beckner, Clarinda
Page-Shenandoah Fair Association	E. R. Woodford, Shenandoah
Pocahontas-Big Four District Fair Association	C. A. Mullen, Fonda
Poweshiek-County Central Agricultural Society	James Nowak, Malcolm
Poweshiek-Grinnell Fair Association	Ralph Sherman, Grinnell
Shelby County Fair Association	L. H. Pickard, Harlan
Van Buren-Milton District Agricultural Society	N. E. Guernsey, Milton
Warren County Agricultural Society	J. Fred Henry, Indianola
Winnebago-Forest City Park and Fair Association	L. I. Aasgaard, Forest City
Winneshiek County Agricultural Society	H. J. Green, Decorah
Woodbury-Interstate Live Stock Fair Association	Joe Morton, Sioux City

COUNTIES IN WHICH NO FAIRS WERE HELD.

Clarke County	A. C. Scott, Osceola
Dallas County	W. D. Westcot, Linden
Madison County	W. H. Maxwell, Winterset
Montgomery County	E. A. Larson, Red Oak
Polk County	J. A. Bachman, Des Moines
Ringgold County	H. C. Beard, Mt. Ayr
Union County	B. M. Breed, Afton

STATE BOARD OF AGRICULTURE.

EX OFFICIO MEMBERS.

State Veterinarian	Dr. J. I. Gibson, Des Moines
President State College of Agriculture and Mechanic Arts	Raymond A. Pearson, Ames
State Food and Dairy Commissioner	W. B. Barney, Des Moines

OFFICERS.

President	C. E. Cameron, Alta
Vice President	O. A. Olson, Forest City
Secretary	A. R. Corey, Des Moines
Treasurer	W. W. Morrow, Afton

DISTRICT MEMBERS.

First District	C. H. Tribby, Mt. Pleasant
Second District	C. W. Phillips, Maquoketa
Third District	E. M. Reeves, Waverly
Fourth District	E. J. Curtin, Decorah
Sixth District	T. C. Legoe, What Cheer
Seventh District	C. F. Curtiss, Ames
Eighth District	F. E. Sheldon, Mt. Ayr
Ninth District	Chas. Escher, Jr., Botna
Tenth District	J. P. Mullen, Fonda
Eleventh District	H. L. Pike, Whiting

On motion the convention proceeded to elect officers and members of the state board of agriculture.

Vice President Olson took the chair and called for nominations for president. Mr. H. C. Leach of Davis county nominated Mr. C. E. Cameron to succeed himself. The nomination was seconded by Mr. Seth Way of Marion county. Mr. Stanberry of Black Hawk county moved if there were no other nominations that the rules be suspended and the secretary instructed to cast the unanimous vote of the convention for Mr. Cameron, which motion was seconded and carried. The secretary announced that he had so cast the eighty-two votes of the convention and Mr. Cameron was declared duly elected president of the state board of agriculture for the term of one year.

Mr. Cameron in the chair called for nominations for vice president. Mr. J. P. Mullen of Pocahontas county nominated Mr. O. A. Olson to succeed himself as vice president; seconded by Mr. C. G. Kaskey of Calhoun county. Mr. Mullen moved if there were no further nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Olson. Motion seconded and carried. The secretary announced that he had so cast the eighty-two votes of the convention and Mr. Olson was declared duly elected vice president of the state board of agriculture for the term of one year.

Nominations for member of the board from the second district were next called for. Mr. W. H. Shipman of Muscatine county nominated Mr. C. C. Croxen of Muscatine county; Mr. Hunter of Johnson county nominated Mr. E. T. Davis of Johnson county; Mr. Joe Morton of Woodbury county nominated Mr. C. W. Phillips of Jackson county, the present incumbent, and Mr. John Cownie of Polk county nominated Mr. Fred McCulloch of Benton county. No further nominations were made and the president declared the nominations closed and instructed the delegates to prepare their ballots. The President named as tellers C. G. Kaskey of Calhoun county, H. S. Stanbery of Black Hawk county and G. H. White of Mills county. The count of ballots resulted as follows: Mr. Davis 52; Mr. Phillips 19; Mr. McCulloch 6, and Mr. Croxen 4. Mr. Morton then moved that the election of Mr. Davis be made unanimous; seconded by Mr. Shipman the motion carried and the president declared Mr. Davis duly elected member of the state board of agriculture from the second district for the term of two years.

For member of the board from the fourth district Mr. T. W. Purcell of Franklin county placed in nomination Mr. E. J. Curtin of Winneshiek county, the present incumbent. Mr. C. H. Barber of Cerro Gordo county seconded the motion. Mr. Purcell moved if there were no further nominations that the secretary be instructed to cast the vote of the convention for Mr. Curtin. The motion carried. The secretary announced he had so cast the eighty-two votes of the convention for Mr. Curtin and the president declared Mr. Curtin duly elected member of the state board of agriculture from the fourth district for the ensuing two years.

Nominations for member of the board from the sixth district were called for. Mr. Ralph Sherman of Poweshiek county nominated Mr. Legoe, the present incumbent; Mr. Jno. Walljasper of Lee county nominated Mr. H. C. Leach of Davis county. No further nominations were made and the president declared the nominations closed and instructed the delegates to prepare their ballots. The ballots were cast and counted by the tellers, the count being as follows: Mr. Legoe 54; Mr. Leach 13. Mr. Leach moved to make Mr. Legoe's election unanimous. The motion carried and Mr. Legoe was declared duly elected member of the state board of agriculture, for the ensuing two years, from the sixth district.

For member of the board from the eighth district Mr. Morrow of Union county nominated Mr. Sheldon to succeed himself. Seconded by Mr. Griffin of Calhoun county. Mr. Morrow moved if there were no further nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Sheldon. Motion carried. The secretary announced that he had so cast the eighty-two votes of the convention and Mr. F. E. Sheldon was declared duly elected member of the board from the eighth district for the ensuing two years.

Nominations for member from the ninth district to fill vacancy caused by the resignation of Mr. J. E. Summers were called for. Mr. L. H. Pickard of Shelby county nominated Mr. Chas. Escher, Jr. Seconded by Mr. Mullen of Pocahontas county. Mr. Pickard moved if there were no further nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Escher. Motion carried. The secretary announced he had so cast the eighty-two votes of the convention and Mr. Escher was declared duly elected member of the state board of agriculture from the ninth district for the ensuing year.

For member of the board from the tenth district Mr. S. D. Quarton of Kossuth county nominated Mr. J. P. Mullen of Pocahontas county. Seconded by Mr. C. G. Kaskey of Calhoun county. Mr. T. W. Purcell of Franklin county moved if there were no further nominations that the rules be suspended and the secretary instructed to cast the entire vote of the convention for Mr. Mullen. Motion carried. The secretary announced he had so cast the eighty-two votes of the convention and Mr. Mullen was declared duly elected member of the state board of agriculture for the ensuing two years.

On motion of Mr. Purcell, seconded by Mr. McBeath the convention adjourned.

PART III

Proceedings of the Ninth Annual Meeting of the Iowa Association of County and District Fair Managers.

DECEMBER 12, 1916.

The ninth annual meeting of the Iowa Association of County and District Fair Managers was held in Des Moines, December 12, 1915, with the President, Joe Morton of Sioux City, presiding.

Chairman Morton: Gentlemen, as we have quite a lengthy program for this morning I think it would be well to start right in. It is not necessary for me to say we are delighted to see so many here, but I might mention, by way of a reminder, that Mr. Norman will accept the annual dues (which are one per cent of the amount received from the state). Further, there are some associations that have not yet paid their pro rata share of the expense incurred in carrying thru the legislation in reference to state aid, the Taylor bill, and before you are in good standing that has to be paid. There is no reason why any association which shares the benefits of this Taylor bill should refuse to pay its pro rata share.

Mr. Norman also has tickets for the banquet tonight, and on payment of your dues (which will put you in good standing) you will be given a ticket.

The first thing on the program is Round Table Talks, and under the head of Insurance the discussion will be led by Mr. John Walljasper of West Point. After each of these discussions we want everybody to feel at liberty to call on the leader, or any one else who is informed, for any information that may be desired.

INSURANCE.

Discussion led by John Walljasper, West Point.

Mr. John Walljasper: The matter of insurance has been sadly neglected as it relates to the fairs of the state. Our attitude toward insurance on fair buildings is much the same as filling up the well after the horse has fallen in, and so we insure our buildings after the amphitheater has burned down.

In the way of rates, I learned from the rating bureau that they rate the average fair ground at $2.75. That is, frame buildings, and if the buildings are within fire protection limits they have a lower rate which the rate book for each town will give. Some secretaries think that is very high. Possibly it is, but at the same time when you consider the risk of the average fair ground, you must realize that the companies accepting such insurance are taking considerable risk.

It has been suggested that there are some companies that will take these risks at a less rate—that is, farm mutuals—but that the rating bureau was standing in the way. I would answer that by saying that they could put on their regular assessment as charged by the rating bureau and then the difference could be returned to the policy holders in the form of dividends. Often the mutual insurance company will pay an annual dividend of ten to fifteen per cent, but sometimes the profit goes the other way, and therefore it is for each society to decide what is best to do.

If I am rightly informed by Mr. Lauer, last year we passed a resolution that the expense incurred in the passage of the Taylor bill be met by the different fair associations in proportion to the benefit derived under it. I understand that most of them have paid up, but some of them have not. It stands to reason that if we had an assessment association for the insuring of fair grounds some would pay and those that were weak or negligent would not pay, and that is all there would be to it. It wouldn't be a success.

This is supposed to be a short talk and the matter can be discussed further by other men.

The Chairman: The next speaker on the program is Mr. L. H. Pickard of Harlan, but on account of his absence we will listen to the next speaker, Mr. A. G. Rigby of Independence, who will tell us how to get cheaper rates.

Mr. A. G. Rigby: Mr. President and Gentlemen of the Convention: The question of insuring fair property I found considerably one-sided. We experienced difficulty in securing stock insurance when we were turned down by our farmers' mutual association. I wrote to some insurance companies located in Des Moines, also to certain company officials with whom I was acquainted and was informed that they did not want the risk. But I finally found one man who understood his business and he took $3000 on our property and spread it around by placing $500 in six different companies at a rate of $2.65 a hundred. We took out that insurance, an inspector came and made a rating, and the make-up of the rating is as follows: We got a rating of $2.31 on our log cabin, $2.31 on floral hall, $2.33 on the exhibition building, $2.37 on the pig and sheep sheds and on the cattle and horse barns, $2.43 on the grand stand, and $2.22 on the speed barns.

Now, in explanation of this rate I might say that all of this property is not only outside of the town itself but also outside of the water system and fire limits. The nearest water hydrant or fire plug is about 1500 feet away from the buildings, and in order to reach them in case of fire they would have to lay a hose across the Illinois Central track.

With regard to getting cheaper rates, I don't know how we will do it unless we get water on the ground. That is a matter we are working on now, but it means that we will have to have the city bring the water mains out to the city limits and they will take them the rest of the way to the fair grounds. If we could do that we could get a very much lower rate.

With regard to organizing an assessment association, I will say I am not in favor of it. I do not know how we could enforce the collection of assessments without considerable trouble. Like the farmers' mutual, it is good insurance if you don't have a loss, but if you do have losses you have trouble. I know of a number of instances where there was a lot of trouble collecting the assessments. They scrutinized every loss in a suspicious way and made it very hard to collect the insurance, and as far as I am personally concerned I am not in favor of any assessment organization for fair protection, because I do not believe there are enough of us to carry it successfully.

Question: What is the average of your rate?

Mr. Rigby: I didn't average these rates. The insurance we carry this year costs us $2.65 straight, but on this re-rating I think it would average probably about $2.35.

Mr. Morton: What do you do about tornado insurance, Mr. Rigby?

Mr. Rigby: Sometimes we carry it and sometimes we don't. We carry that in a mutual.

Mr. Morton: What about the rate?

Mr. Rigby: Very low; very inexpensive.

Voice: We have to pay a dollar a hundred.

Mr. Rigby: We carry it in a mutual and it is lower than that. When you carry it in a farmers' mutual I think the insurance protection costs about ninety cents—something like that. The president of the farmers' mutual until recently was a member of our board of directors and he looked after it for us.

I think that is all I have to say on this subject.

The Chairman: We will next hear from Mr. C. E. Cameron, Alta, on Games and Concessions. The topic as subdivided is, "Why not make them carry a state license" and "Why not appoint a committee to report on objectionable ones?" This discussion will be led by Mr. C. E. Cameron, president of the Iowa State Board of Agriculture.

GAMES AND CONCESSIONS.

Discussion led by C. E. Cameron, Alta.

Mr. Chairman and Members of the Iowa Association of County and District Fair Managers: I want to congratulate the various county fairs upon their success in 1916. In all my connection with county fairs and in reviewing the history of them, I do not think that as a rule they have ever been as successful as they have been during the year 1916. We had a meeting of the American Association of Fairs and Expositions in Chicago last week. I think we had about fifty-five members present who were connected with that association, and the report showed that only two state fairs and expositions in the country ran behind financially during the past year. This is a remarkable showing. Mr. Corey has compiled a report of the county and district fairs of the state (they will be here for those who wish a copy) and I think you will find that 1916 was a splendid year for the county and district fairs of Iowa. There are several things to which you can attribute the successes of the past year, but the most important, in my estimation, is the financial aid and encouragement that the state of Iowa has given. However, I will leave that subject for discussion by some one else later.

The question assigned me is Games and Concessions. You know there is nothing more important that the county fairs have to contend with than games and concessions. I am sorry to say that in the past some few fairs in the state of Iowa have been handicapped with respect to aid from the state because of differences of opinion as to what constitutes gambling games; but I am glad to say that this year not one complaint has come to the department of agriculture in regard to gambling. Not a single complaint! It is the first time in my experience, acting with the secretary of the department of agriculture upon reports of the different county fairs, that there has not been a complaint.

I am not going to speak upon the question as to what we do at the Iowa State Fair in regard to games, but I am going to tell you what we did when I was secretary, for sixteen years, of the county fair in Buena Vista county. I never had any complaint of my games and concessions for this reason: I was very careful what I allowed on the grounds. I admit that you cannot run a county fair unless you use a lot of judgment. It is like running any other business. You have to cater to many different classes of people to make your county fair a success. I think the little games of skill like the cane rack are just as essential to a county fair as some other things. The average country boy would save up about so much money for the county fair. He would do chores about the farm in order to earn this money; then he would come to the fair and spend his four or five dollars, and if he couldn't spend that money in his own innocent way he would go away with the idea that the county fair was a failure.

The games that I allowed at the county fair for years were those not used for gambling. Anything pertaining to a gambling proposition was not permitted. If the concessioner had a paddle wheel I would investigate his proposition, and if there was any chance that he could start a gambling game as soon as our backs were turned (you know those fellows take advantage of you if they can), I would turn him down. These men come to you with a straight face and say they have an honest game with no gambling about it. When you go over the grounds on Tuesday looking things over they are waiting around with their little games, but when Thursday comes, the day with eight or ten thousand people on the ground and the day when you are too busy to look around, they get out their outfits and try to make a cleaning. Our object always is not to allow a man to start games of that kind on those days, and if they do we fire them.

Take the innocent game of a knife rack or a doll rack. I think they are just as essential to amuse young fellows as many other games and exhibits. Yet it is said they are gambling games. Now, as I said before, it was a question of a man getting in. When a concessioner came to me I would ask, "What have you got"? If he said he had a paddle wheel I would tell him, "Nothing doing! Nothing in the way of a paddle wheel or anything of that kind." Or he might say, "I have a little jewelry proposition that turns around," and again I would say, "Nothing doing!" But if he had something that looked all right, then I would tell him emphatically, "If you have anything else than you have represented to me, there will be something doing.. I am going to have somebody watch you and just as soon as you vary from the proposition you have listed to me, you will be closed up, fired out of the grounds and your concession forfeited." That is what I insisted on.

Then take the matter of pickpockets; they don't come to you and you don't know who they are, so you have to catch them, and you have men on the grounds to watch those fellows in order to take care of things of that kind.

Simply give the men to understand when they come to you that you are not going to wink at any of that funny business. If the secretaries of the different fairs will give the men to understand for one thing that they are going to insist on a straight game, the men with gambling propositions will have to go some place else. Let them understand that you are not going to write out a contract for one thing and know that later on they will give you a gambling proposition. In my experience I have had very little trouble in games and things of that kind, and it has been because I used caution in choosing concessions.

In the matter of number, I never tried to see how many concessions I could get on the fair grounds. I wanted every concessioner to go away with money in his pocket. I wanted him to make money. I am sorry to say that for five or ten dollars some secretaries will let a man set up a juice-joint under the guise of a trained lion, or something like that. When you look over the show you know they couldn't make expenses legitimately, and if you keep them down they will go away and knock your fair. My method was this: Take the matter of soft-drinks. I would auction off five concessions of soft drinks to the highest bidders. I sold the pop corn privilege and the ice cream cone privilege the same way. That is the only thing I sold exclusively on the fair grounds. About three or four weeks before the fair I would advertise liberally and give notice to the different concessioners that we were going to sell privileges on the fair ground on a certain date, and I would put a minimum on the amount that each of those concessions would bring. The minimum was $50. No concession would sell for less than $50 and the man who bought the first concession had first choice in the matter of location. We had our concessions under the grand stand, which was centrally located and made an ideal place, with five big roomy booths for these purposes. Those concessions would bring all the way from $50 to $175 apiece, and those fellows would make money. We have had men come in year after year ready to buy those stands. Why? For the simple reason that they made money. It costs a concessioner about so much to come to your fair and set up his stand there. Now, if that man after coming there pays $50, $75 or $100 for a stand and he knows there are only five stands on the fair grounds and that people have to come down back of the amphitheater to get their refreshments, he knows he will have an equal chance with others to do business. But if you have fifteen or twenty $10 stands scattered over the ground they know it will be detrimental to their business. I conducted it this way for years and they always went away with a good word for the Buena Vista county fair and with cash in their pockets.

Now, it is well for the secretary of the fair to know how the concessioners are getting along financially, but it won't always do to ask them directly how much they are making, because they may lie to the secretary, but they won't lie to each other. Have you ever noticed two concessioners sit down together at night after a hard day's work? They will tell one another absolutely what business they are doing, even if they are competitors, and then the matter is solved for the secretary for he may step around to one and then another and find out what they are doing. Men would come around to me after I had sold those concessions and ask to run an outside stand, but I would say, "Nothing doing! You had an opportunity to come in and buy those stands and you didn't, and now we are protecting those men." And those men would always come back year after year and always had a good word to say for the Buena Vista county fair because they made money.

You have all had experience enough along these lines to know that when these concessioners leave your fair after having had a bad week and go to the next fair, when they are asked how about the last fair they will say "Rotten!" You know that while a fair may have been a success and a majority of the concessioners made money, if you have many concessions scattered out on your ground there will be some who have a bad location and they, of course, lose money. Naturally they will go away knocking the fair. My experience in fair work is that everybody connected with the fair should go away with the feeling that the fair was a grand success. It not only helps the people next year but it will stimulate other people and they will come to you and say "You have a grand fair here." It is a mighty pleasant feeling to have these men come to you after the fair and say "Dandy"! "I want to come back next year!" It is so much better than for a fellow to come to you and say "I had a rotten business; I cannot pay you for this concession." He may be lying, but how do you know? They sometimes do that.

My method was like this: Before issuing a contract or giving a ticket the concessioner had to pay fifty per cent of the price of the concession in cash. If he said, "I haven't got the money; I have had no luck this season," I would say to him, "If you have a concession now that you have been operating for a month (or six weeks) and it hasn't been a success so far, I don't want it on the fair grounds. If you haven't got the money to pay the fifty per cent down you had better go some place else. I don't want you on our fair grounds." I make them pay fifty per cent when I issue them a ticket or assign them ground space for their concession, and then on Wednesday night, now, Thursday is the big day and everything looks favorable. I go around and make them shake down the other fifty per cent and pay up before the big day comes. I would rather have one-half less concessions, with as much money as I could get from allowing them space on the fair grounds, than to have a great line of fellows with worthless, questionable joints that aren't a success and who will later knock the fair.

I will be glad to listen to suggestions by anybody or will try to answer any questions that you gentlemen wish to ask me.

Question: How can you give away an automobile under the present law.

Mr. Cameron: I took that matter up with the attorney general. I thought that was a very favorable proposition for fairs and would get a big crowd. I took it up with Mr. Cosson and labored with him for hours on the proposition, but without success. When I went to him I said, "Now, General, what is the matter with advertising that we are going to give away an automobile; that a ticket will be given to everybody that goes into the grounds on a paid admission ticket, and that the ticket will allow the holder a chance on the automobile?" I thought that was an innocent proposition and it looked good to me, but he replied, "That won't work; that is gambling and you cannot get around it." Then I said, "General, how can we go to work and do that?" and he said, "One way you can give an automobile away is simply give tickets and let them vote for the most popular young lady or the most popular young man. There will be no drawing about it. It must be a vote and that is the only way it can be permitted." That was the sum and substance of it and it is the only possible way you can give away an automobile.

Mr. Morton: In the event that some one would contest the right of the fair to draw their state aid, and in order to enable them to draw this state aid there must be an adjudication of some kind, I would like to know—because I don't, and perhaps some of the other men here don't know—who is the tribunal that decides who is guilty and who is innocent?

Mr. Cameron: We decided that, but it didn't go.

Mr. Morton: Who overruled you?

Mr. Cameron: The auditor of state. I will tell you a little experience we had last year. We had two fairs in Iowa whose appropriation from the state was held up and in both cases, absolutely, the motive for the protest appeared to be spite work that was started against the individual members of the association. We had a hearing. The big question has always been where to draw the dividing line—where games of skill end and gambling commences. That was a question with us and we have had opinions from every attorney general that has been in here for the last ten or fifteen years, and of course they have differed. Last year we had these two cases. We took the matter up and had a two day's hearing. There were present the representatives of the fairs concerned and those opposing the state aid. We also had the state auditor present—the man who issues the warrants. We went over the situation very carefully. In one case there were some fellows that had slipped in and started some gambling devices, and as soon as the management found it out they fired them out. These parties brought us evidence from the best class of people in their community showing that they absolutely stopped that and it wasn't on their grounds after a certain date. They showed us conclusively that they had conducted a good, clean fair. We didn't decide it that day. We had another session the next day.

The next case was that of a fair that had never allowed anything of a questionable character on their grounds. I know that personally because I had visited their fair very often and they had never allowed games of any kind. Last year they allowed the little game—you probably had it—the little Charlie Chaplin doll proposition. When the parties said they would protest that game the fair officials immediately threw it out, because they did not want a gambling proposition of any kind. The secretary of that fair asked the fair managers of the preceding fair if it was legal, and he was told that they had information from the attorney general that it was allowable, that they could use that. The secretary wasn't satisfied with that, however and went to the attorney general and laid the matter before him. The attorney told him he thought it was not violating the law. There was the word of the county attorney who was supposed to represent the attorney general's office in the state of Iowa, as all counties attorneys are, and of the management of the preceding fair. It took us a whole day to hear the case. They brought evidence from a minister, and everybody connected with the fair came down. The attorney assumed that it was a case of gambling; but under the circumstances, while the thing had been a divided proposition as to what constituted gambling, in view of the recommendations they brought down, we decided that the association was entitled to draw the state aid. That was unanimous, that agreement; and the next thing we heard was that the auditor of state had held up their warrant.

We took into consideration certain extenuating circumstances and the fact that the best people of the town had come down with sworn affidavits in regard to the conduct of the fair, and upon the hearing we allowed it. That is, the executive committee of the department of agriculture allowed it, but when it got to the auditor of state he refused to sign the order.

Question: What was his excuse?

Mr. Cameron: He said it was gambling.

Mr. Rigby: We gave away an automobile. It was a good thing. I took the matter up very carefully and found out how far we could go, and after a thoro investigation I was also very careful not to say anything about what was put into the mails. I wouldn't want to be quoted as giving absolutely correct details in this matter, but that is approximately correct. As an illustration of what is done in other states: In Denver, Colorado, they placed a number of beans in a jar on exhibition in a drug store window and whoever guessed nearest to the correct number of beans in the jar got a prize. The supreme court decided it was not gambling inasmuch as the beans were practically the same size and the cubic capacity of this jar could be accurately determined, and then it was a simple question of mathematics. That was all right.

At an industrial exposition in some town, I believe it was in New York, one of the big wire companies suspended a large coil of wire from the ceiling of the exhibition building almost to the floor. It had a great many strands in it and it was of a certain gauge, and they offered a prize in advertising for the person who guessed nearest the weight of that wire. A professor of mathematics took the gauge of the wire, counted the strands, measured the number of feet to the ceiling and figured it out almost correctly. It went into the courts and the court decided it was gambling. One of the Minneapolis newspapers had a scheme whereby they gave calendars or blotters, or something of that kind, and distributed them widely all over the city when they started a circulation campaign, and on a certain day they would publish a number and if the number corresponded with the number on your calendar or blotter, whatever it was, then you were entitled to a certain premium. The court decided that was gambling and the entire issue of the paper was barred from the United States mails. You all know of the case of one of the horse papers that started some kind of a deal, I think it was in regard to a futurity, and it was held up, and all of the papers that had advertising in them were held up and the publisher had to stop it.

The Chairman: There is another topic here. I think we will go on and have the next speaker and try to confine ourselves to the subjects suggested on the program. The idea of having a concessioner carry a state license or state authority, something that shows us his status, is a matter we will discuss next. I wrote the attorney general a letter about doll racks and different games. When I got his letter I made up my mind that the best way for me to do was to have no games of any kind, not even a doll rack, because in my humble opinion I didn't like the idea of considering a doll rack a gambling game. When a man writes to me and says a doll rack is a gambling game I am not very proud of my education along the lines of gambling, and I think I am justified in saying that he doesn't know what he is talking about. I don't see how a man throwing balls at a doll is gambling and in my mind it cannot be considered as such, but rather than make $25 or $30 out of that concession I made up my mind we would not be making anything out of it if our state aid was protested.

Subdivision No. 1 is "Why not make them carry state license" and No. 2 is "Why not appoint a committee to report objectionable ones?" The attorney has state policemen under his direction. I understand the present attorney general has had these special policemen and it seems to me if they could pass on these things and determine what is gambling and what is not, and what games are all right and what are not, something that would be uniform, we would not have this trouble. It would be awfully embarrassing to me, and I would feel like licking somebody, if, after I swore to an affidavit that I had no gambling on the grounds, some fellow down here would say "You did have gambling and we won't pay you that money." We will now hear from Mr. A. C. Pabst of Albia on this question.

Mr. A. C. Pabst: Mr. Chairman and Gentlemen of the Convention: I don't see very much more ground to cover on this subject. While my experience has been along the lines of privileges and concessions, and that is about all there is in connection with the fair except the ticket business, I will say that since I have taken charge of the concessions of our association we have had quite a good balance every year regardless of what the condition of the weather might be. As to handling these matters successfully, it has been pretty generally gone into as to what we could and could not do under the law.

I have listened to some of the decisions rendered by the attorney general along those lines as to what might be termed gambling or a game of chance or an amusement. Now, I will say this; communities differ. In our small county of sixteen townships we have a community made up of all classes of people. Monroe county is the banner county of the state of Iowa in the output of coal, so you may know about what class we have to cater to in order to get them to attend the fair. You have to supply something that will bring them to your grounds and at the same time keep within the law so as not to forfeit your state appropriation.

Now, it might be well to state about how we handle this thing. This year in August we gave away three prizes—two automobiles and a buggy. Now, when I say "we" I don't say or mean that the fair association did it. We have a mess of boosters in our county divided into different classes. We have the labor unions down there; we have the merchants' organizations or the business men's association. The fair association has nothing whatever to do with these automobiles. The business men's association issues tickets with duplicate numbers; they issue them by thousands, and for every dollar that is paid on book account or cash they issue one of those tickets on the automobiles or buggy. They advertise that these prizes will be given away upon the fair grounds on a certain day. The buggy is given away on the second day after the entry day and the two automobiles on the next two days. The fair association allows them to bring the autos and buggy out there and give them away. The person who holds the correct number when it is called gets the prize. If no one responds they wait twenty minutes and call the next one, and so on until some one holding a duplicate number responds. This is done by the business men's association. It is the only way they can handle it, and I don't think the fair association is liable in any way whatever.

In regard to engaging concessions, it is a pretty hard proposition but I established a rule to answer all my correspondence and make a carbon copy of each letter written. Quite often I answer fifteen to twenty-five letters a day. Some man has written for information, stated what he had and about what it was, clean and moral and perfectly safe. I answer it and make a notation on the bottom of the letter as to date it was answered and make a carbon copy of my answer. When he replies he will say, "Your terms accepted. Will be there on time." What are those terms? I turn to my file and find them on the carbon copy. And when they come and try to slip something over on me I can nail them to the cross. Before you get them on the ground you have to take it for granted that they are clean and moral, and after they set up they can put on a clean show if they have to, or they can put on anything else that you will permit.

Just how a man should handle the entire concession business is a matter of opinion. There are so many things that come up on the spur of the moment that the privilege man is not able to decide without harassing the executive committee, and it is up to him to use his own judgment. All shows must carry state license as a war tax, but on concessioners I have my doubts whether that would be the proper thing to do. I do not see where we would benefit by it. The main thing is for the superintendent of concessions to keep out objectionable ones. That is the hardest thing to do, and you have to keep an eye on them continually, because the people who follow these fairs or these homecomings and fall festivals come for the purpose of making money. They come for the purpose of making money and it takes eternal vigilance to hold them down. Mr. Cameron stated how he held them down in his country, but there is a whole lot of difference between an agricultural county and the people that make up the agricultural county and the county that is largely mixed with the mining element.

Mr. C. H. Barber: In regard to the state license and the committee to report on objectionable concessions: I was going to make a motion that we refer this matter to the executive committee with the request that they consider it and take some steps along that line. This gentleman says Mr. Cameron has a fair in an agricultural county and he has one in a mining community, but the fact that there is not a law made for the agricultural county fair and another for a fair that is in some other kind of county.

Mr. Rigby: I will second the motion.

The Chairman: It has been moved and seconded that the matter of making some arrangements or some recommendations to this association for a state license for concessioners be referred to the executive committee with the request that they report at some later date. Are there any remarks?

Mr. Pabst: What do I understand that this state license shall cover?

The Chairman: That is up to the executive committee.

Mr. Pabst: If it would bar our local people who are now active boosters of our fair I think it would be an imposition, because you might get it into an organized gang of what you might call concessioners or grafters, and our local people that you know to be all right and don't need watching would have to be licensed like the others. It depends on how broad that question is as to whether or not it would be a detriment.

The Chairman: I don't know what kind of report the executive committee will make, Mr. Pabst, but I think at the time they make it it will be up for discussion and the matter could be brought up at that time.

Mr. J. Q. Lauer: I might just say a few words in explanation with regard to that particular subject. Your home people don't want these so-called gambling devices. The proposition was in the way of protecting each particular fair or all fairs. Here is the idea: Every secretary, every board of directors of every fair, and every state official has undoubtedly a different idea of what constitutes gambling. Now I was figuring like this: Suppose Mr. Pabst had a game he was going thru the state of Iowa with. He would write me that he had a game that was not gambling and I would have to take his word for it, but when he got on the ground I would find that he was operating a gambling game. And suppose some particular individual would report to your society in Des Moines that Mr. Pabst was operating a gambling game on my grounds and that we therefore should not receive state aid. What then? Let Mr. Pabst come to the state house here to whoever should decide this matter and describe his game, whatever it happened to be. If it was a legitimate game, issue a license, and thereafter no secretary would have to accept the word of Mr. Pabst alone as to the character of the game, but would have a state permit to examine and he would feel perfectly safe in allowing it on the grounds.

In reporting concessions we ought to organize a system whereby one secretary could get information to or from other secretaries of the state pertaining to the morality and standing of the concessioners, but with a state license everybody would be protected. If you don't want him, you have the privilege of refusing to allow his concession on the grounds.

The Chairman: The matter will come up for discussion when the executive committee make their report. Those in favor of the motion signify by saying "Aye." Motion unanimously adopted.

The Chairman: We have with us this morning Mr. George E. Hamilton of the Chamber of Commerce, Des Moines, from whom we would like to hear a few words.

Mr. George E. Hamilton: I won't take any of your time except to extend a welcome to you all from the Chamber of Commerce. We like to have you all here. We have a great capital city and we have a great fair in this city, and we feel that our own success in this city is dependent upon the success of the cities and the fairs in the remainder of the counties of the state.

If there is anything that you want in Des Moines and we can serve you, let us know and we will do our best to assist you. I see by the program that you are well provided in the way of entertainment, but if there is anything you want, call on us. We have arranged for the ladies to attend the Princess theater this evening, and in the parlor at 7:30 we will issue tickets to all ladies of your convention who wish to go to the theater.

The Chairman: The hour is quite late and we will adjourn until after dinner. I see the next topic is led by the Irish orator from Fonda and we don't want to miss Mr. Mullen's talk. There are a good many here who haven't paid this year's dues and I hope they will give it immediate attention. If there are no objections the meeting will stand adjourned until 1:30.

AFTERNOON SESSION.

The Chairman: Gentlemen, we will come to order. We have a lengthy program for this afternoon and will start in the afternoon session and later take up the unfinished business that we had left this morning. The first this afternoon is an address of welcome by Hon. John MacVicar, mayor of the city of Des Moines. I have the pleasure of introducing to you Mr. MacVicar.

ADDRESS OF WELCOME.

Mr. President and Gentlemen of this Association: The reason they admit me at all to make a welcome address at such conventions as this is that I do not occupy a great deal of time in trying to tell you about the things you know so much about and about which I know so little.

I am not going to tell you how great a town we have here. We are somewhat circumspect, but still I think we can give you everything that you ought to have while you are here, and if you had more it might be worse for you. You may judge from the newspaper that you read that there is nothing lacking here in the way of hospitality, but you must not take too much stock in what the newspapers publish on the situation in Des Moines.

We are mighty glad to have you here. We are interested in your organization. We have our state fair here, but we occasionally go out to some of the other counties where we attend the county fair, and if I would counsel you at all in your work it would be to not overlook those entertainments that we have had from our boyhood days, like the lady with the charmed snakes and the trained fleas.

We are glad to have you here, and congratulate you on the appearance of your organization. We know you realize the importance of this organization. We trust you will enjoy your stay, and we know we will enjoy your company and hope you will come again.

The Chairman: We appreciate the kind words of Mr. MacVicar and assure him it is a pleasure to meet in Des Moines. It is our capital city and we enjoy coming here.

We have with us this afternoon Miss Margaret C. Walker who desires to say a few words on bird culture and the advisability of various fairs offering premiums for bird houses. The idea is the care and protection of birds and I am sure you will all be pleased to hear a few words.

Miss Walker addressed the convention for a few minutes, advocating the care and protection of bird life and the stimulating of interest in the construction of bird houses for our song birds in the way of offering prizes for the best constructed bird houses by county and district fairs thruout the state.

The Chairman: I would suggest to Miss Walker that if the committee of the Federation of Women's Clubs has some definite plan as to what prizes to offer and what styles of bird houses should be considered, they submit their plans and suggestions to the secretary of the association. He will gladly mail them to the secretaries of the various fairs. I would suggest that this meeting take some action in this matter.

Mr. Rigby: I would like to speak a word along this line. I have taken some interest in this matter myself and those present who read the Ladies' Home Journal in their homes recall that some time ago it published some very fine photographs and also got out a set of plans for bird houses, which you could secure for a nominal sum to cover postage. In connection with giving premiums to make it a success, somebody must be interested and give it attention. Appoint some one to take an interest in matters of that kind; give him personal supervision and then offer suitable premiums. Get these sets of plans or designs so that they have something definite to work from and you can make it quite a success. My suggestion would be that the teacher in the manual training department of the public schools would be the one to cooperate with us in it.

The Chairman: Did you have any idea, Mr. Rigby, as to the right way to dispose of this matter at this time, as to commending to each member of the association some plan? Do you think a committee should formulate some plans and then mail it to the members?

Mr. Rigby: Mr. Chairman, I make a motion that this matter be given to the executive committee with power to act, and I think it should be taken care of by that committee.

Motion seconded and unanimously adopted.

The Chairman: The next number on the program is the address entitled Benefits of Fair to Community and State by Mr. Floyd Douglas of Mason City.

BENEFITS OF FAIR TO COMMUNITY AND STATE.

FLOYD DOUGLAS, MASON CITY.

Recent years have brought many changes in all lines of work, but especially have we progressed in the agricultural field. The beaten tracks have been forsaken and we as a state have met these changes half way, embracing the opportunities they presented. The possibilities of Iowa and old Mother Necessity have made it essential that we gain more knowledge as to our acquaintance with soil and its production, familiarity with our possessions, and facts concerning results that might be obtained. To this end agricultural schools, short courses and splendid instructive farm papers have been placed at the disposal of every producer in the state. As a result of this education the trained man has pursued paths of development and their learning has not been wasted. For out of this knowledge and establishing of facts has developed results surpassing all expectations.

By encouraging the applying of this learning and the comparison of excellence of products the county fair has been of unlimited value to the various sections and to the state in general. Here we bring the finished product or the best we have been able to produce during the past year and its merit is adjudged. We compare not only the different objects presented, but producers meet and gather much information concerning the methods applied. New channels are opened and interest is awakened. To many farmers it is the annual event where all the residents of the county meet and present subjects which have held their interest thruout the year. As a result of these county fairs where comparisons are made, ideas exchanged, helpful suggestions received, the visitor returns home inspired to better his production the coming year. The place Iowa has made for herself as the result of these get-together events is one of world-wide fame. Not long ago this report came back from the International Live Stock Show at Chicago:

IOWA BREEDERS MADE BIG HIT.

> Chicago, December 7th. Iowa live stock breeders are making a decided hit at the International Live Stock Show here this week and officers of the Greater Iowa Association who are in Chicago endeavoring to help Iowa exhibitors feel confident of taking home several grand prizes.
>
> The Iowa spirit has taken hold of the live stock men gathered here, especially the draft horse breeders. Prior to this year the individual exhibitors were scattered all over the barns at the International Live Stock Shows. There might be one Iowa exhibit in this barn, and one in the next, and two in the barn beyond, and so on. But this year the draft horse breeders of Iowa got together and leased an entire barn and guaranteed to fill it with two hundred and fifty of the best horses that ever set foot in Chicago or anywhere else.
>
> This move on the part of Iowans has astounded the other exhibitors up here—because no other state has ever thought of it. The result is that visitors, especially those from South America and abroad, are greatly impressed with the Iowa Show. The entire barn is decorated in one color scheme and here and there about the barn are great banners of purple silk, bordered in gold, and carrying in gold letters the announcements of world's grand prizes won by Iowa horses, corn and other agricultural products at the Panama-Pacific International Exposition last year.

Where did this wonderful success start; to what can we attribute the origin of this development? To none other than the county fair. "By their fruits we shall know them" is a good motto for Iowa, and it is as applicable now as it was two thousand years ago. This age considers but one thing—results. We have succeeded in producing the results because we have learned how to manage and how to produce *the best* by careful study and the subjects have been made inspiring by the gatherings held each summer or fall in the counties of our state. The branches here open to inspection are varied. Ranging from Iowa's choicest and most cherished production of babes with the suggestions to the young mother who is appalled at the obstacles to be met in the success of her undertaking in babyism, to the display of the tiniest ferret that accompanies its family to this exciting place.

Worthy of mention is the enthusiasm aroused among the boys in various juvenile departments. We all know that if a man does anything worth while it is because he did something as a boy. Pamper a boy, make him believe the world has no use for the things he can do and he'll do nothing when he becomes a man. We prepare for success and so the coming generation will be more capable of producing the perfect article for having received the real recognition given the boy for the results produced by his labor will make us a step ahead in progress. Its the making of a more useful generation and consequently of the greatest value to a community and state. The youth of this age doesn't have to be made to do things worth while; they have to be let, and thru the fair they receive encouragement in each endeavor and will come out broad-minded, hard-muscled, successful men.

Then there is the shiftless farmer who lacks the initiative but who becomes inspired by observing the success of his neighbor. I've met several who have made no pretense of excelling in their work until they saw the splendid results of the yields from, perhaps, the farm just adjoining theirs. Whole sections of a county have been infused with the idea to excel by a few visiting a good county fair where horse-talk, cow-, mule- and mutton-talk are topics made interesting and practical. The most brilliant minds of the age are giving thought to the subject of soil production. I was interested in reading a short article by Abraham Lincoln on this subject, one paragraph is as follows:

> "No other occupation opens so wide a field for the profitable and agreeable combination of labor with cultivated thought as agriculture. I know nothing so pleasant to the mind as the discovery of anything that is at once new and valuable—nothing that so lightens and sweetens toil as the hopeful pursuit of such discovery. And how vast and varied a field is agriculture for such discovery! The mind already trained to thought in the country school, or high school, cannot fail to find there an exhaustive source of enjoyment. Every blade of grass is a study; and to produce two where there was but one is both a profit and a pleasure. And not grass alone, but soil, seeds and seasons—hedges, ditches and fences—draining, droughts and irrigation—plowing, hoeing and harrowing—reaping, mowing and threshing—saving crops, pests of crops, diseases of crops, and what will prevent or cure them—implements, utensils and machines, their relative merits and how to improve them—hogs, horses and cattle—sheep, goats and poultry—trees, shrubs, fruits, plants and flowers—the thousand things of which these are specimens—each a world of study within itself."

These with their improvements are all exhibited at the county fair. Any means of bettering soil production is an aid to the progress of the country.

A great deal can be said regarding the social life. In this age when community life is playing a big part in our rural conditions, the county fair meets every demand, plenty of good, clean entertainment, a broadening of vision and a better acquaintance with our neighbor, all tend to make several days of fair life most profitable. For instance, watch a bunch of men while a good clean horse-race is under way. There are eyes that sparkle, radiant faces, and you'll swear they are twenty years younger than they were when you saw them buzz into town with their families. They say no man can have melancholia if he loves a horse, and understands one, so these lovers of the noble breed shake off troubles and send cares flying to the winds. Then there is the mingling and associating of farmer-folk and town-people. I've always maintained that any event where this acquaintance can be broadened cannot but be of value to all. Too many times they meet only in a commercial way; this should not be. They enjoy the same social pleasures and would gain much by co-operation.

Of our state fair we are justly proud and we believe it to be the last word in excellency of state fairs. But we also think that the counties with the exhibits have assisted in making the state fair the excellent educational factor it now is. Our county work is like the grade school in preparation for the high school. And the benefits attained by the county is progress for the state.

Too much credit cannot be given the men whose confidence, hard work and management are giving the people these annual fairs in the various counties. I have some knowledge of the obstacles they encounter each year. First there is the skeptic. We suppose the Lord had something in view when he made him, but it seems to us that so far he has not been placed as a benefit. Many of them in a county will, unless the secretary is the embodiment of courage, make a successful fair an impossibility. Hours and days are put in in doing the hardest work imaginable and too many times the people who come to enjoy and derive benefits are suspicious of every endeavor and prone to criticize the enterprise as a whole. Undoubtedly some of them think that the performance was thought of one day and staged the following. I have followed one secretary thru a day when it seemed to me that everyone from the peanut vender to the aviatrix had an unreasonable request or demand to make.

I think everyone of us have seen many a day when it would have been a lot easier to fail than to succeed. But thru your tireless energy, courage, and right mental attitude you have conquered obstacles and given to the people of your county and state a useful life. What better can you give?

The Chairman: One organization in the state of Iowa that has a vision of the possibilities of the various county and district and state fairs in the betterment of the state in all conceivable lines is represented here this afternoon by its secretary, and we have with us this afternoon Mr. Ralph Bolton of the Greater Des Moines Committee, whom we will be glad to hear from at this time. I have the pleasure of introducing Mr. Ralph Bolton.

Mr. President and Gentlemen of the Convention: Recently I made a trip around the state with the members of the Greater Iowa Association trying to arouse interest in that Association and I made a point in my talks that while we think we are bright enough in Iowa, as a matter of fact we lack a whole lot of being progressive. I called attention to the fact that while it is true we are the greatest agricultural state, that is entirely due to Nature's help, because Nature has smiled on Iowa and made every acre fertile, but man hasn't been able to produce as much per acre as they do in the rocky soil of New England, and farm for farm other states are able to beat us. That doesn't speak very well for Iowa. We are too willing to sit back and think everything is all right. We are not working hard enough collectively, and even individually we are not doing so well.

I am glad to know that in Iowa we have a county fair organization, because I believe that body is needed to produce the best that there is in Iowa in a manufacturing way, in a business way, and in an agricultural way. I don't believe there is any place in the world that has the opportunity that the people of the state of Iowa have, but while we have rested back contentedly we lost one good man in fair work, and now the state of Minnesota has lost this same man to the business men of New England; and we will have to watch ourselves again or Minnesota will be stealing again from Iowa. I believe the state ought to get behind the county organizations and probably the district fairs, because they bring out competition and make the people strive hard to meet one another and to rival one another. That brings out the best there is in men, and I am in hopes that the county organizations of Iowa will be greatly increased and hope that the friendly rivalry will be taken up between the different counties and different communities and try to work to see which one can match the other with products of the soil and factory and hand. We need co-operation between counties and between communities and between cities. As it is now, every fellow is out for himself; every county fair has had until recently to fight its own battles, but it is the beginning of the end.

We are great in Iowa to cry about taxes; we think we are taxed to death, and some one in the legislature will cry about taxes; and yet did you ever stop to think that the great state of Iowa, with its county fairs, its state institutions and its militia and courts, its pioneer institutions and its oil-testing department, and the services of the health bureau, and all the thousand-and-one activities, did you ever stop to think that the taxes of the people by direct taxation are less than the sum which the township taxes the people for the pretense that they are going to do something on roads. The whole state of Iowa costs but four and one-half mills, and yet the township collects five mills for dragging the roads. When a man talks about the high state taxes he forgets all about the little township back home. We want the people to appreciate what state taxation means. It is a shame to think that the state of Iowa, with all its activities, has to use so much time combating public opinion that its taxes are too high, when in fact it taxes the people less than the township does. Until you reach that view which takes into consideration these things, there will be no progress made in a true sense in the state of Iowa. The county, district and state fairs do not do all the work they ought to, and we have got to help the people of Iowa understand the taxation problem and see where the money of the state of Iowa goes.

SPRING MEETING.

Discussion led by J. P. Mullen, Fonda.

The Chairman: We will now take up the program where we left off this morning. On the topic of "Spring Meeting" are the heads of "Standpoint of mutual benefit", "Advantage of forming circuits", "Advantage of securing free acts", and "Why not both?" This discussion will be led by Mr. J. P. Mullen of Fonda, Iowa.

Mr. J. P. Mullen: Mr. Chairman and Gentlemen: I am very glad to have an opportunity to appear before the executive officers of county and district fairs of Iowa. You are aware that I took some interest in this organization from the start and I am glad to see the wonderful development and intense interest taken in the later years in comparison with the former attitude of those skeptical about its success.

I had hopes that probably this discussion would be completed before my arrival but at the same time there are some points I would like to have brought out. And while I may only touch the high places, I will look to the able assistants who will follow me for further developments on these propositions.

In regard to a spring meeting, from the standpoint of the horsemen, it is a topic worthy of discussion. So far as his interests are concerned, it is in the development and training of his horses; it touches the secretaries and the officers of the county fairs, it arouses their interest in the performance of horses later at the summer field meets.

Now I haven't given much study to the proposition of a spring meeting. I can conceive of a spring meeting being a success, so I think some other meeting would be the thing to be discussed. The horseman, of course, is decidedly interested in what position he is going to occupy at the later meetings—as to whether he is a winner, whether the dreams that he has dreamed and thought over all winter long, the races that he has won around the furnace and the hot stove, will come true in the summer. I have had most of the horsemen say they never lost a race in the winter time and I believe that is true, but the idea now is to have a race meeting in the spring to give an opportunity to the horse owner to bring out the possibilities of his horses and at the same time make it a paying proposition to the local institutions that put on the meetings. That is the problem.

From my point of view, I have always looked to the interest of the local association and those in charge to make it a paying proposition, and at the same time I have the best of good feeling for the horseman and desire that they make their calling a success also, but I can readily see that an early summer or spring meeting would be a direct benefit in two directions; first, if he has not got a winner, the sooner he discovers it the better it will be for his pocket book; if he has a winner, it is great advertising for the fairs of different sections of the state to secure that horse; he makes good time and the people will come to the fair and talk about it. If you will have this horse or that horse compete at Marshalltown or Waverly at an early spring meeting, the winner is an attraction and an asset to your fair. The problem to my mind is how you can get these early spring meetings and make them a success locally, because the local officers do not like to put on a losing game.

These other phases of the question I will leave to the other gentlemen who have had more experience in the business than I have.

In regard to the circuits and the advantages of a circuit: In that line I have probably had some experience, having been connected with the Northwest Iowa Fair Circuit for nine or ten years, and I can truthfully say I believe that circuit has been a very successful one, being composed always of from eight to eleven members, and I know from the comparison of entries that the Northwest Iowa Fair Circuit, on the average thru the whole state, has more horse entries than any other circuit in Iowa. Our purses haven't been overly large, but fairly above the average, running from $300 (the least that we can have) up to $500, and the number of classes range from seven to ten, and sometimes twelve. Now I think the Northwest Iowa Fair Circuit has been in existence about eleven years and it is quite harmonious. I don't say this in any manner of boasting, but I do say that the circuit has continuously been a success. It has been composed of many good, progressive towns, and in our annual meeting, which is held at Sioux City (and our friend from Sioux City, Joe Morton, can be said to be almost the god-father of the institution), we discuss the matters of purses and classes and the aid and assistance we have to extend horsemen in an open and friendly manner, and we give them all the encouragement possible.

Now, as a rule, Rockwell City opens the circuit with from seventy-five to one hundred and twenty-five entries, which you will agree is a pretty fair entry list, followed by Fonda, Alta, Sheldon, Rock Rapids, and a number of others and finally winding up at Sioux City. I don't remember of any towns in the circuit, as I said before, having any difficulty and everything has been harmonious. It has been a successful institution and it has aided the secretaries of the different institutions in securing a fine entry list and making a success of the racing game. It adds to the attractions. Where fairs are not in co-operation they get no benefits from their attractions for the simple reason that you can see at a glance that when one fair is only twenty or thirty miles from the other, the people in these days of autos attend most of the fairs around and do not want to go and see the same attractions repeated at the neighboring town. Consequently the aim and secret of success in this circuit has been to get different attractions from different amusement houses, or different amusements from the same houses.

I could never see that a circuit was any benefit in securing attractions because every secretary has notions as to what attractions are most pleasing to his local community. I am decidedly of the opinion that so far as getting horses—getting good horses and good drivers—that a circuit is a benefit to a lot of fairs if they can arrange the circuit so that the railway facilities will be right in shipping distances, as we have up there, and I think that it tended to our success, together with the hospitality of Sioux City during the Inter-State Fair and the personnel of the officers of the Northwest Iowa Fair Circuit.

I believe that is all I have to say. I would like to have the assistants who follow me bring up the matter of early spring or summer meetings, for I think it is of value to horsemen where they can get their entries.

The Chairman: The next speaker on this subject is Mr. H. C. Leach of Bloomfield.

Mr. H. C. Leach: When I first got the letter from the secretary last fall or winter sometime, with regard to changing the meeting from fall to spring, I thought I was heartily in favor of it, but the more I have thought of it in different ways the less I know whether I am in favor of it or opposed to it. I can readily see some advantages in Mr. Mullen's hope with regard to a spring meeting, but I am speaking directly of this meeting. If we had a spring meeting, it is true, in getting attractions and different things, it might be all right, but it is my observation that in a good live fair they must be working pretty nearly all the year; and if we had this meeting in the spring some time and then the state fair meeting in the fall, I am of the opinion that we would lose interest in both of them, because some of our small fairs depend upon sending a representative up here for both meetings, and if we had a double dose I am afraid some of our fairs would be misrepresented at both meetings. I believe if we want to make the thing a success we must have the co-operation of all of the state.

We have a circuit of some Iowa and some Missouri territory and I know that it has been of great benefit to us in getting horses and dates and moving from one to the other, and also in arranging our purses so that there will be no misunderstanding or confusion about purses or classes, and horses can go from one to another and know what to expect. Therefore we have had no trouble in getting our races filled.

As to the meeting, I would like to hear from the secretaries from the different parts of the state. I know this is not on the program, but we have a lot of fairs that are weak and while it would be nice to have two meetings, if we had the meeting in the spring we would have to come back again in the fall and it might tend to lose the interest of the small fairs.

The Chairman: Mr. Clark of Marshalltown will be the next speaker.

Mr. W. M. Clark: Mr. President and Gentlemen: This has been a day of surprises to me. One surprise is that I was put on this program. I think I remember receiving a letter from Mr. Lauer containing a program, but just about that time a newspaper man happened to be in my office and he picked it up and took it away before I had time to look it over, consequently I didn't know I was on the program until today.

The subject assigned to me is "The Advantage of Securing Free Acts." I don't believe there is a person present who will question for a moment the benefit of a good run of free acts to the county fair. Mr. Cameron said here this morning that we have to cater to a large number of people, and with an attendance of from eight to twelve thousand a day you have to have a varied program in order to amuse all of the people. A certain per cent of the people want to go into the grandstand to see the races; others to see the free shows, and, between the two, our experience has been that we haven't been able to build the grandstand large enough to hold the people who are willing to pay money to go in there. I believe I have admitted the advantages of building the largest grandstand possible and then collecting the quarters for admission.

As to the advantage of free acts, I believe the more we have invested in free acts the closer we will have to figure to make them pay expenses. In fact, our fair works free acts and for the past five years they have never cost us more than $150 a year. The race admissions from the grandstand and the entrance fees of the horses have paid all of the expenses, practically. Again, with a good line of free acts, it is practically the making of a free show. I noticed in Mr. Corey's report that there are thirty-three fairs in the state of Iowa that are holding night shows, and at those thirty-three fairs there was an attendance of 66,600 people in the evening. That, at twenty-five cents apiece, would be $16,650 at the least. That $16,650 will go a great ways in covering the expense of night shows, including the amount we have to pay for fireworks, and in my opinion will justify any fair in the state in putting on a first-class entertainment during the nights of the fair. From a business standpoint I would certainly favor a good line of free amusements.

It is different buying free acts today than it was ten years ago when we commenced. We have a great many reliable agencies to go to and get what we contract for. I know the first time I ever went to buy free shows that Mr. Cameron, Mr. Olson, Mr. Simpson and a lot of the state fair men were in Chicago together and they said "Look out and see that you get what you want to buy." I am glad to say that we don't have to look out now at all. A half dozen men come to our North Iowa Fair Circuit and any one of them is reliable. We can buy of them and know we are getting just what we contract for.

The Chairman: The next speaker is Mr. C. H. Barber of Mason City.

Mr. C. H. Barber: Last spring at Hampton a group of secretaries made the remark that they thought it would be a fine thing if we had a meeting at which a greater number of secretaries were present, and Mr. Lauer wrote to all of the secretaries in the state suggesting having a spring meeting of the fair managers of the state. We had an idea that it would be better to have the meeting in the spring than at the present time. I have thought it over since then and think we should continue just as we have it now. Every member should be present and take part in the election of officers and I would make it one of the conditions of receiving state aid that we attend this meeting.

I think we should have a meeting in Des Moines in the spring, however, to see the free acts and other entertainment features together. We could spend a day or so at it and I believe that we could pay our associations very large dividends by so coming. We get fifteen or sixteen up in northern Iowa, sometimes at Mason City and sometimes at Waverly, and we have good meetings and good results from them, but we do not have one-half as much as we would have at a meeting of this kind, and the thing, I think, Mr. Lauer had in mind was making this spring meeting just supplementary to the fall meeting. Why can't we have a spring meeting for at least one year and try it out; say in February some time after the state fairs have their meeting in Chicago, and at that time you would find all of the vaudeville people and the other people here. I don't know that you would save any money, but I think you would be more independent than you are by looking at it in a catalog.

If I should pick out one of the attractions and one of our members who had had that show would say it was no good, it would be easy for me to see that it wasn't what we wanted. As far as I am concerned, I should like to see this meeting tried out. I would suggest that the matter be referred to the executive committee to make a report on a spring meeting for the fair managers here in Des Moines at such time as they deem advisable and I believe it would be to our advantage. I believe that every man that comes here secures good ideas and you are bound to get something out of the meeting. I got an idea from a man this morning that will pay part of my expenses down here today.

If it is the will of this body I should like to hear from some of the other men. We should make a trial of it and have it here in February or March, or the week following the week the state fairs have their meeting.

The Chairman: Now, gentlemen, these are all the speakers that have been assigned to this subject. It is now open to discussion and we would like to hear from you who have not been assigned topics for discussion but who have thought of it here or who desire to get information.

Mr. Rigby: I move that it be the sense of this organization that the matter of a spring meeting be referred to the executive committee with power to act.

Motion seconded.

The Chairman: And that the matter of details be left to the executive committee with power to act?

Mr. Rigby: Yes.

Motion seconded.

Mr. Bradley: What is the object of having it in the spring. I don't believe we would have a corporal's guard here in the spring. Why couldn't we have it at this time and save expense?

Mr. Shipman: I am in favor of this meeting. I don't suppose I will be here. We have a peculiar situation down with us. The secretary comes here to this meeting and when he returns home he goes before the society for election, and if he is defeated what he learns here may be lost. But the free attractions are handled by a committee and I want that committee here at the spring meeting. They are the ones that should be here. I am very much in favor of that meeting, and I think we can send our attractions committee here at the time and believe they will get more information in a day or in an afternoon than in three or four days at different times in the year, as at present. I am in favor of it.

Mr. Pabst: I agree with the gentleman just on the floor. As I look at this matter, it concerns concessions or the privilege committee more than any other division of the county or district fairs. I believe a spring meeting is the proper thing for that committee, but I don't think it is the proper thing for all the different divisions.

The suggestion that these different organizations have superintendents appointed to work under them and handle certain entertainments or features of the fair, is a good one, and among the most important are the privilege, amusement, concessions and games, if you please. Now, the spring meeting is the exact time for those people to meet, those superintendents especially, whether they are members of the executive board of the different district and county fair associations makes no difference. And I think it should always be the object of the executive committee to allow the actual expenses of the privilege men. I am one of them, and I am no pauper, either; but this is a matter of importance as wide as this state, and no individual should be asked or compelled to attend these conventions at his own expense when he practically donates all his labor, his time and his ability to the purpose of benefiting the entire community.

Now, while we have a good executive committee in our association, and I have perfect confidence in them, yet I am not in favor of turning everything to that committee to handle as they please, because there is not one that possibly understands the necessities and what is required to make a success in each particular department, so I will offer this amendment to the gentleman's motion, that on the third Monday or on the third Tuesday -I will say the third Tuesday in the month of February of each year—the secretary call together at least the superintendents of the divisions, and if necessary the superintendents of the different divisions including the officers.

With his consent I will offer that amendment; that this committee be instructed to name the third Tuesday in February, which will make it practically a spring meeting, and it is about the time that we want to know what we are at; we are beginning to do business.

Mr. Barber: The idea was that the executive committee was to simply act as to when this meeting should be held. They are simply to call this meeting and each fair send anybody they please. This committee is not to hire any attractions, but just say what date it is to be, because we do not want to conflict with the state associations. All the executive committee will do is to settle on the date and then your society can send your men there to look over the attractions. It simply sets the date and fixes up the program such as this program today.

Mr. J. Q. Lauer: Just a few words. I don't know whether this was properly defined, or not, this matter of spring meeting that I have in my report, but the idea was this: That at this one-day meeting there is no chance to getting very far in the way of securing attractions for the county fairs. What I mean is, here we have a meeting preceding the agricultural society meeting and aside from this program have no time to go into fair matters. You took my idea in the first place to mean to do away with this particular meeting, and only send your delegates down here to represent you at the meeting of the state agricultural society, but after a little thought I believe it would be a good idea to send your delegates down here for the agricultural society and then let your delegates form your program for the spring meeting. Your spring meeting would be one, two or three days' duration, and, as far as your concessions are concerned, it would have to come after the spring meeting of state fairs in Chicago, and at that meeting you could take up the matter of railroad rates and you could take up the matter of forming circuits, as far as your speed was concerned. I suppose every fair has its circuits, so why not send your delegates down here to work out these matters? The proposition of rates will be discussed in the legislature this coming session and we want to be ready for it.

I was in Chicago this past week at the meeting of fairs and they have taken up the proposition of universal advertising. It is a matter that can be worked out by the county fair boys just as well as the others. Have your committee formed for the purpose of buying a universal system of advertising and buy it in the aggregate. The state fairs at their meetings do this and Mr. Corey can explain what the outcome of that is, but you cannot get at those things in one day meeting at this time of the year. The proposition, I think, is if you want to work together to send your delegates for the agricultural society meeting and let them arrange for the different speakers and this program and then report at the spring meeting. The idea was, after your fairs had elected officers and they had appointed the committees, to let them come together in the spring and arrange for the different circuits.

Mr. Mullen: When I received the program it was unaccompanied by any explanatory code and I honestly felt that it was a harness race instead of a gallop for the spring meeting. It looks now as though the horse is on me. I am in the position of the three sons who, on reading their father's will, discovered that all the property he had consisted of seventeen horses and he wanted them divided one-half to the oldest son, one-third to the second and one-ninth to the youngest. Of course, when they came to dividing the property it was almost impossible to divide, so they got to quarreling together and finally a neighbor stepped in and said he had known the folks for a long time, that they had a fine father and a good mother, and in order to keep peace in the family he would give them a horse and they could then divide the property in compliance with their father's will. So the oldest got his one-half of the eighteen horses, or nine horses; the next son got his one-third, or 6 horses, and the youngest one-ninth, or two horses, and then they discovered that one horse was left, and they gave that back to the kind neighbor, and so I will give it back to you.

The Chairman: Are there any further motions or remarks?

Voice: I don't exactly understand the motion. If we have the spring meeting, does it do away with this meeting?

The Chairman: No.

Voice: If we keep this meeting as it is, all who want to attend the meeting may do so.

Mr. Clark: As I understand this motion, it is simply that this executive committee will get the amusement people here at one time and you can consult with them instead of waiting for them to come to your place. That covers the ground as I understand it.

The Chairman: For the benefit of the executive committee, if they decide to have such a meeting, how many here would attend?

The Chairman: It would be an imposition to have them come to Des Moines to meet eight or nine people. If we are going to have a meeting, if you want the executive committee to call such a meeting and invite the concession people here, we ought to have some representation. Personally, I think the time allotted to this meeting, one day, is too short. We ought to have a two days' meeting, but I question very much whether the spring is the time to have a meeting of this association for the simple reason that we have a circuit meeting in northwestern Iowa about that time. We are going to hold that meeting up near us, and we are going to do everything we can to get a big attendance. I don't want to take advantage because I am chairman of this meeting, but I am absolutely opposed to anything that will detract from this meeting as it now stands. In the past two years we have accomplished something we have worked for ever since I have been a member. We have gotten an appropriation of some size and dignity and I believe in the course of two or three years, if this association keeps together and works in harmony, we will accomplish more. One important thing we should not lose sight of is the meeting of the state agricultural society. The law provides that we have a vote in the election of the members of the board of agriculture, and it is for that purpose that we come to Des Moines, as well as for the benefits we derive from this meeting. I believe we ought to proceed along lines of caution in starting another meeting or doing anything that will detract from the interest in this meeting. We have only one day, it is true, but we get a great deal of benefit. If I don't learn anything coming down here, just to meet the fellows and talk together would compensate me. If it weren't for the intercourse I have with the brother managers and brother secretaries the meeting wouldn't be half so beneficial. We have a fine association here and I don't believe you are going to form circuits or racing circuits among yourselves in your particular locality which will supercede in importance this meeting.

You cannot come down here, gentlemen, with a committee to meet a racing circuit, pick out free attractions and close contracts with concession men in one day and do it properly. I am opposed to anything that would tend to take you away from the state department of agriculture that meets tomorrow. Some members will say "I cannot go to both meetings, so I will go to this meeting in the spring," or another will say "We don't want to send anyone down to this meeting, they are not going to sell any attractions there; they are not going to book any free acts. We are going to the spring meeting," and the result would be that you would cut the attendance of this meeting squarely in two.

Mr. Rigby: We want to get this matter clear in our minds. The intention of this motion was not that there was to be a spring meeting, at all. I appreciate all that Mr. Morton has said and I am sure that I abide with him in loyalty to this organization, and it may be that after the executive committee gives this matter full consideration they will see that the disadvantages of having a meeting in the spring more than overcomes the advantages which might accrue and decide not to have it. We are not committed to a spring meeting by voting for this motion; at least, that is not the intention of the motion. It might be that after giving this matter full consideration the executive committee would decide that we would get greater benefits by having one day more here in the fall. There is no reason why we could not commence one day earlier and have two days for our meeting, but the intent of the motion is not to commit us to a spring meeting.

The Chairman: I appreciate that, Mr. Rigby, and that is the reason I asked for them to stand and indicate who would attend the spring meeting. The executive committee cannot act without the cooperation of the members of the parent body. As a member of the executive committee this year I would rather have an expression of opinion on anything I was going to act on from the majority members than to go at it and assume all the responsibility.

Mr. Rigby: Right in this connection let me say further, I believe the executive committee would not give us a spring meeting without taking the matter up with the fair secretaries all over the state and find out how many would attend and how many would be in favor of it. That certainly would go a long way.

Mr. Rosbrook (Oskaloosa): I came to this meeting to learn. I am new in the business; it is my first experience this year, and I think this meeting ought to be made long enough so that we can argue these questions more than we have been this morning. We have a large program here and everybody will appreciate the fact that we are crowded for time and things were spoken of and suggested by some members which some of us know nothing about. You cannot get this information through the mails; you cannot get it unless you talk with a man face to face, and right here we have them all together. Mr. Barber made a good point when he said he would like to see it made compulsory for every fair that draws state aid to send a representative to this meeting. We cannot get other people's ideas unless we get together and talk things over, and I would like to see a half day spent in a big room where the men may mingle together and ask and answer questions.

Mr. Reeves (Waverly): I want to say that I agree with our chairman in what he said regarding the spring meeting. It occurs to me that an organization composed of representatives of all the fairs in the state would be too large an organization to do anything in the way of buying concessions and arranging circuits in one meeting. You couldn't get around with it, but in northwest Iowa, Sioux City and vicinity, you have a race circuit composed of just fairs enough so that they can arrange it in reasonable time and get the work done. In northern Iowa, Hampton, Waverly and other places, we have another association and meet after the state fairs have secured their attractions. We have plenty of time in the smaller circuits to do those things. Why not have the state organized into various associations, convenient to one another as to railroad facilities and distance and have this meeting at the particular time and place with the attraction men in attendance, and the work could be done without a cumbersome meeting. I don't believe the state meeting would be the best plan, but I do favor the local meeting as we have practiced it in northern Iowa.

The Chairman: I would like to hear from Mr. Cameron on that proposition. I wish you would tell us about your meeting in Chicago. We have probably ten days there and we spend three in looking over attractions and don't do much either.

Mr. Cameron: I want to say, gentlemen, that I don't do anything except for the best interests of the county fairs, because if there is one man in the state of Iowa who loves the county fairs it is myself. I have always worked for the things that were to their best advantage, because they are feeders to the great state fair of Iowa. I think I can talk to you intelligently on what effect that spring meeting would have. While it may be true that meeting would be short, I would suggest, instead of having a spring meeting, that you have a longer session in the fall. You cannot have it on Monday and Tuesday because there are a great many people in the state of Iowa that would be unable to get here on Monday on account of no Sunday trains. They could not get here until Monday night or Tuesday morning and thus would lose a part of the convention. Why not have this meeting following the state meeting, holding it Thursday and Friday? And the reason I say that is this: we have a two-days' meeting in Chicago. We get together and talk about those things that were a success at our last meeting and compare notes. And so you come here in December fresh from your successful meetings and you tell the other members of the things at your fair that were a success, and possibly you can give some one an inspiration that will repay him for the time put in down here. The meeting following after the state fair meeting, Thursday and Friday, would not interfere with the state fair meeting and would meet your requirements.

As Mr. Norton says, the question is whether there are many of your fairs that will pay for two trips to the city of Des Moines. There is only one time that they will stand for expense and that is the day before the great exhibit. I wouldn't want to say anything that would tend to dissolve the harmony that exists between these organizations, and I am giving you our experience as we had it in Chicago.

We meet in Chicago in February. We used to invite a lot of fellows in there but we don't now; we only invite those people in who will make a circuit that will not conflict. We used to try to set dates for all the fairs. I have been on the committee when we would labor until three and four o'clock in the morning and never get together. So we decided to let every fair set its own date. They set the dates and the committee simply represents them, whether they conflict or whether they do not conflict, and we get along harmoniously.

Mr. Morton has outlined the conditions which exist in these different circuits. Now, you come down here to our meeting in February and the attraction fellows are here. The attractions people want to put every attraction in with the least possible expense, as far as transportation is concerned, and get the show in as often as they possibly can. What is the result? They would take those fairs lying closest together and you would be divided into different crowds, the northeastern Iowa circuit, the northwestern, the southern, the southwestern, and so on, all trying to grab the popular attractions. You would find that the attraction men would work the different fairs where they would have the least expense of transportation. We meet in Chicago to look at these attractions, but we never sign any there. We get their propositions and take them up afterwards. We have a circuit up in northwestern Iowa and it has the attractions. Mr. Mullen stated that we do not aim to have the same attractions, because probably twenty-five per cent of the people living between two towns will go to both fairs, and we try to vary the entertainment.

In this matter I am afraid of stirring up discord. We had that in Chicago and it is liable to disrupt our organization. The trouble we have had has been that state fairs were on certain dates and got certain attractions and then the disappointed ones accuse the others of standing-in with the attraction men. For instance, there was Iowa, Minnesota, Wisconsin and Illinois all in a group, and the men who put on the big attraction would rather sign with those fairs at less money than to sign one and then have to jump from here to New York or Michigan. I am afraid of this proposition, gentlemen; I am afraid it is going to divide you; I am afraid you are going to lessen the attendance at the meeting of the department of agriculture, and I believe a remedy would be to have your annual meeting follow the meeting of the department of agriculture. I think one whole day should be devoted to round-table talk, where the secretaries of fairs could tell what they did and the things that were most interesting. That is something that would help all of us and give us ideas which we may apply to our own fairs.

I am willing to abide by anything that this body does, but I am afraid that you are going to drift away from the annual meeting of the department of agriculture if you have this spring meeting and that it will simply tear this association apart.

The Chairman: In connection with this motion, gentlemen, there is a matter which you may have overlooked. In order to change this meeting we must amend the by-laws. How would this suit you: Have the Tuesday meeting as we do now; then attend the meeting of the state department of agriculture, at the state house on Wednesday, and have another day (Thursday) down here again. It seems to me that might solve the problem. The constitution may be amended by a two-thirds vote of the delegates present at any regular meeting, and the constitution provides that our meeting shall be the Tuesday preceding the Wednesday meeting of the board of agriculture. Those in favor of submitting the matter of a spring meeting to the executive committee for action simply signify by saying "aye".

The Chairman. The motion is lost. The meeting is open for unfinished business and new business. This is about as interesting a time as we have had in this meeting—this last half hour, and let's arrive at some plan in reference to this fall meeting.

Mr. Rigby: I move that the by-laws be amended so that hereafter we can hold a one or a three-day meeting and that the chair appoint a committee to revise the by-laws.

The Chairman: As I understand your motion it is that article VI of the constitution be amended so as to read that regular meetings of this association shall be held in Des Moines, Iowa, on the first Tuesday before the second Wednesday in December of each year and continue for three days.

Mr. Rigby: Yes, sir.

The Chairman: Gentlemen, you have heard the motion; that article VI of the by-laws be amended so as to read "that the regular annual meeting of this association shall be held in Des Moines, Iowa, on the first Tuesday before the second Wednesday in December of each year and continue for three days." Is there a second?

Voice: Second the motion.

Mr. Barber: Let the secretary call the roll.

The Chairman: This is a motion on amendment of this constitution and it requires a two-thirds vote of the members, and the best way to get it is by roll call.

Mr. Clark: I will make an amendment to that motion, that the articles of our constitution be amended to read that the meetings of this association shall be on Thursday and Friday. It seems to me we are making a mistake by making it Tuesday and Thursday.

The Chairman: I am going to be arbitrary and say that that amendment to the motion is out of order. The motion before the house is that article VI of the constitution be amended to read that "The regular annual meeting of this association shall be held in Des Moines, Iowa, on the first Tuesday before the second Wednesday in December of each year and continue for three days."

(On roll call 41 voted aye and 2 no.)

The Chairman: The chair will rule that the amendment is carried, gentlemen.

Our program for the night is the report of the secretary. It is only half past three now and if there is no objection Mr. Lauer will make his report at this session. I think there should be some definite rule with regard to these dues and trust that those still unpaid will be promptly taken care of.

Voice: I would like to bring up a question at this time under new business. I would like, first, to inquire if there is a legislative committee in this association?

The Chairman: I think there was such a committee but it was discharged.

Voice: The reason I ask is we are bothered a good deal in Hardin county by the fact that tent shows are allowed to come into the town of Eldora during the county fairs. I would like to know why this association cannot put a bill through the Iowa legislature the same as they have in Illinois prohibiting tent shows or amusement parks to operate within so many miles during the sessions of the county fair.

Voice: Last year a tent show came into our town just previous to our fair and we lost a lot of money. Our mayor endorsed it and we went into the hole on account of it.

The Chairman: Gentlemen, in this matter of legislation, it would be well for us to provide for a legislative committee, for the subject is one that should be taken before the next legislature. They recognized the utility of the agricultural societies in the mulct law by prohibiting saloons operated within a certain distance of an agricultural fair. I think it would be impossible for a state to pass a law giving a board of directors authority to say whether a circus could come in, because that would be clothing them with too much power, something the law cannot do—to delegate power to a body not recognized under our police system; but they could pass a law that no traveling circus could come where there was a fair in operation because the legislature is a higher body than a city council. We ought to have a legislative committee so that if matters of this kind are referred to them they can go ahead and get things through the legislature.

Voice: There are many important matters touching fairs that should be brought before our legislature. Among them is the law that we have on our statute books that county fairs may receive $1000 aid through their board of supervisors. This law was so drawn that it permits the supervisors to give excuses. As I recall the reading of the law, it is this: That the board of supervisors may appropriate $1000 to a fair association providing the fair association owns their grounds free from all debt. Now, gentlemen, it is the very fellows who have the debt who need the money. There are not over three or four fairs in the state of Iowa that get that thousand dollars, because of that interpretation of the law. A legislative committee could get that amended in such a way that we could get it. We are entitled to it and should have it. Further than that, we should have legislation on our insurance. You will pardon me if I make reference to my case in Black Hawk county at Cedar Falls. A year ago last November we had our buildings rated by a man from the rating bureau. He went to the fair grounds, took a general view of the plant and said the rating on the buildings would be around four per cent, made out his report and sent it in. I got in communication with our insurance commissioner at Des Moines and had it reduced to two per cent. I think there are few fairs in Iowa that are not paying an exorbitant rate. Through co-operation of a legislative body we can get an adequate rate on our fair property if we go at it right, and therefore I move that the chair be authorized to appoint a committee of three as a legislative committee.

Voice: Second the motion.

Mr. Barber: If we elect a legislative committee and they do get this law passed, you cannot force the insurance companies to insure fair grounds for any price. They can refuse to take your risk, and I question whether it is wise for any association to rush into lobbying to obtain this thing. As Mr. Schofield has suggested, it can be carried out, but I don't think it would be well to go over the heads of the new officers and appoint a committee known as the legislative committee. I think that the executive committee can handle this thing very well.

The Chairman: All those in favor of this motion to appoint a legislative committee say "aye".

The Chairman: The motion is lost.

The Chairman: We will proceed with the regular business and hear the report of the secretary.

The secretary's report was read and accepted as read.

The Chairman: What is your pleasure as to the election of officers this afternoon?

Moved, seconded and unanimously adopted that the convention proceed to the election of officers.

The Chairman: The first officer to be elected is the president.

The following nominations were made:

C. G. Kaskey, Manson.

J. C. Beckner, Clarinda.

Motion made, seconded and adopted that the voting be by ballot.

The Chairman: While the tellers are counting the ballots we will continue with the election of the other officers. Any nominations for vice president

After the nomination of Mr. Barber of Mason City motion was made that the nominations close. Adopted.

Motion thereupon made, seconded and adopted that the secretary cast the vote of the convention for Mr. Barber as vice president.

The Chairman: The secretary is next. Are there any nominations?

After the nomination of Mr. J. Q. Lauer of Waverly motion was made, seconded and adopted that nominations close.

Thereupon motion was made, seconded and unanimously adopted that the president cast the entire vote of the convention for Mr. Lauer as secretary.

The Chairman: There was a motion made at the last meeting in regard to appointing an executive committee.

Motion made, seconded and adopted that the same executive committee be appointed as served during the past year, with the exception of Mr. Morton, who would be succeeded by the president-elect.

Mr. Chairman: Gentlemen, I announce that Mr. J. C. Beckner has received twenty-three votes and Mr. Kaskey has received twenty votes. Mr. Beckner is declared president for the next year. Any further business, gentlemen?

Voice: Speech!

Mr. Beckner: That is a pretty hard proposition, but I wish to thank you all very much for your support, and assure you I will serve you to the best of my ability.

The Chairman: I see Mr. Corey in the room and I will ask for a word from him.

Mr. Corey: I don't know as I have very much to say. Joe looked down here and hit upon the idea of having me talk to fill in time. I think you men are getting tired and I don't believe there is anything I can say. We have a very good program over at the state house tomorrow and I hope you will all be with us.

Note: There was at this time a discussion regarding the recommendation of the board of survey of the United States Department of Agriculture to cancel the two-year agricultural course at Ames college, and the following action was taken:

Motion was made, seconded and unanimously adopted that the convention go on record as vigorously opposing the recommendation of the federal board of survey that the two-year course in agronomy at the Iowa State College be discontinued.

Motion made, seconded and adopted that the convention adjourn.

(Adjourned 6:30 p. m.)

PART IV

Live Stock Awards and Press Reports of the 1916 Iowa State Fair and Exposition

HORSE DEPARTMENT

SUPERINTENDENT .... C. F. CURTISS, Ames

PERCHERONS.

EXHIBITORS.

Don L. Berry, Indianola; Ben Bohlander & Son, Altoona, Iowa, and El Paso, Ill.; F. H. Buchanan, Newton; A. J. Birkstrand, Cambridge; George Baker, Newton; T. B. Bowman & Son, Boone, Neb.; W. S. Corsa, White Hall, Ill.; Crawford & Griffin, Newton; Champlin Bros., Clinton; Wm. Crownover, Hudson; Loren Dunbar, Earlham; Dunhams, Wayne, Ill.; C. B. Dannen & Sons, Marshalltown; George Eggert, Newton; Harry Early, Liscomb; E. N. Gates, Newton; R. W. Hoit, Beacon; Hurdcroft Farm, Monticello, Minn.; F. A. Huddlestun, Webster City; E. E. Ives, Oskaloosa; A. & J. C. Johnson, Lynnville; W. L. Joy, Grand Junction; J. G. Lytle & Son, Oskaloosa; H. C. Livingston, Monroe; W. A. Mark, Adel; M. J. Nelson, Cambridge; John Nau & Son, Middleton; J. G. Stafford & Son, Morning Sun; J. O. Singmaster & Son, Keota; W. M. Tice, Oskaloosa; R. P. Wait, Reynolds, Ill.

JUDGE ....A. L. ROBINSON, JR., Pekin, Ill.

Stallion Four Years or Over—First, J. O. Singmaster & Son, on Lagos, 99093; second, Dunhams, on Lycee, 105934; third, J. O. Singmaster & Son, on Majorat, 150482; fourth, R. W. Hoit, on Lent, 101770; fifth, Champlin Bros. on Kesako, 91822.

Stallion Over Three, Under Four—First, J. O. Singmaster & Son, on Nandou, 99071; second, J. O. Singmaster & Son, on Keota Insight, 107242; third, W. S. Corsa, on Iocarno, 99999; fourth, J. O. Singmaster & Son, on Nadir, 99064; fifth, Wm. Crownover, on Koda Besique, 108569.

Stallion Over Two, Under Three—First, J. O. Singmaster & Son, on Fairhope, 117379; second, J. O. Singmaster & Son, on Keota Jalap, 106186; third, Crawford & Griffin, on Nero, 116282; fourth, J. O. Singmaster & Son, on Eugene, 118355.

Stallion Foal—First, Harry Early, on Rustum; second, Ben Bohlander & Son, on Ruben; third, Harry Early, on Quincy.

Stallion Three Years or Over Bred by Exhibitor—First, J. O. Singmaster & Son, on Keota Insight, 107242; second, W. S. Corsa, on Iocarno, 99999; third, T. B. Bowman & Son, on Horatius; fourth, J. O. Singmaster & Son, on Keota Bambin, 99989.

Stallion Under Three Bred by Exhibitor—First, J. O. Singmaster & Son, on Keota Jalap, 106186; second, W. S. Corsa, on Carlotheon II, 113863; third, Harry Early, on Pontiac, 116017; fourth, J. O. Singmaster & Son, on Maplegrove Jalap.

Yeld Mare, Four Years or Over—First, Dunhams, on Pink Brillante, 57897; second, J. O. Singmaster & Son, on Malice, 99132 (108026); third, J. O. Singmaster & Son, on Magicione, 99125 (105322); fourth, J. O. Singmaster & Son, on Italienne, 80551 (97010).

Mare and Foal, Mare to Count 50 Per Cent, Foal 50 Per Cent—First, Harry Early, on Imposte, 70618 (87727) and foal; second, C. B. Dannen & Sons, on Erma, 74615 (79576) and foal; third, Harry Liscomb, on Impressee, 70597 (87728) and foal; fourth, Harry Liscomb, on Florence II, 85529 and foal.

Filly Over Three Under Four—First, W. S. Corsa, on Carnante, 94321; second, J. O. Singmaster & Son, on Naine, 99075 (111545); third, T. B. Bowman & Sons, on Helen Helix, 97206; fourth, T. B. Bowman & Sons, on Nettie, 107822.

Filly Over Two Under Three—First, Dunhams, on Turquoise, 110366; second, J. O. Singmaster & Son, on Keota Kyrielie, 114114; third, R. W. Hoit, on Maple Grove Ethel, 109029; fourth, W. S. Corsa, on Carjante.

Mare Foal—First, C. B. Dannen & Sons; second, Harry Early, on Queen Maitais; third, T. R. Bowman & Sons, on Calsine.

Mare Three Years or Over, Bred by Exhibitor—First, Dunhams, on Pink Brillante, 57897; second, W. S. Corsa, on Carnante, 94321; third, T. R. Bowman & Sons, on Nettie, 107822; fourth, George Baker, on Neva, 105602.

Mare Under Three Years, Bred by Exhibitor—First, Dunhams, on Turquoise, 110346; second, W. S. Corsa, on Carjante, 109953; third, J. O. Singmaster & Son, on Keota Clarice, 114302; fourth, W. S. Corsa, on Carma, 112433.

Champion Stallion—First, J. O. Singmaster & Son, on Lagos, 99093 (102309).

Reserve Champion—First, Dunhams, on Lycee.

Champion Mare—First, Dunhams, on Pink Brillante, 57897.

Reserve Champion—Dunhams, on Turquoise, 110346.

Champion Stallion Owned in Iowa—J. O. Singmaster & Son, Lagos, 99093 (102309).

Reserve Champion—J. O. Singmaster, on Fairhope, 117379.

Champion Mare Owned in Iowa—J. G. Stafford & Son, on Patience.

Reserve Champion—J. O. Singmaster & Son, on Keota Clarice, 114302.

Get of Sire—First, W. S. Corsa; second, J. O. Singmaster & Son; third, T. B. Bowman & Sons; fourth, C. B. Dannen & Sons.

Produce of Mare—First, Dunhams; second, W. S. Corsa; third, George Eggert, fourth, George Baker.

Grand Display—First, Dunhams; second, W. S. Corsa; third, J. O. Singmaster & Sons; fourth, C. B. Dannen & Sons.

Five Stallions Owned by Exhibitor—First, J. O. Singmaster & Sons.

NATIONAL DRAFT HORSE BREEDERS' FUTURITY—PERCHERON DIVISION.

Stallions—First, J. O. Singmaster & Son, on Laynot, 120931; second, Dunhams, on Karnac, 122927; third, W. S. Corsa, on Carvalentine, 122109; fourth, Don L. Berry, on Pompey; fifth, Champlin Bros., on Dean Kesako; sixth, J. O. Singmaster & Son, on Blackstone, 121486; seventh, W. S. Corsa, on Carori, 121986; eighth, Harry Early on Pontiac, 116017; ninth, J. O. Singmaster & Son, on Model, 121261; tenth, J. O. Singmaster & Son, on Maplegrove Jalap; eleventh, W. S. Corsa, on Carcitus, 121636; twelfth, Dunhams, on Lincoln P., 121597.

Fillies—First, J. G. Stafford & Son, on Patience; second, J. O. Singmaster & Son, on Keota Clarice, 114302; third, W. S. Corsa, on Carcile, 122105; fourth, W. M. Tice, on Orpha; fifth, J. O. Singmaster & Son, on Maple Grove Snowball, 122960; sixth, Hurdcroft Farm, on Koisuettie; seventh, J. G. Stafford & Son, on Pluma; eighth, J. G. Lytle & Sons, on Gwendoline; ninth, W. S. Corsa, on Folito III, 122103; tenth J. O. Singmaster & Son, on Keota Lady II, 114303; eleventh, Dunhams, on Kathleen, 122828; twelfth, J. O. Singmaster & Son, on Maple Grove Ida, 122961.

SPECIAL PRIZES OFFERED BY THE PERCHERON SOCIETY OF AMERICA.

Stallion Three Years Old or Over, Bred and Owned by Exhibitor—First, J. O. Singmaster & Son, on Keota Insignt, 107242; second, W. S. Corsa, on Iocarno, 99999; third, T. B. Bowman & Son, on Horatius.

Stallion Under Three, Bred and Owned by Exhibitor—First, J. O. Singmaster, on Keota Jalap, 106186; second, W. S. Corsa, on Carlotheon II, 113863; third, Harry Early, on Pontiac, 116017.

Champion Stallion, Owned and Bred by Exhibitor—First, J. O. Singmaster & Son, on Fairhope, 117379; second, J. O. Singmaster & Son, on Nandou, 99071 (111547).

Mare Three Years or Over, Bred and Owned by Exhibitor—First, Dunhams, on Pink Brilliante, 57897; second, W. S. Corsa, on Carnante, 94321; third, T. B. Bowman & Sons, on Nettie, 107822.

Mare Under Three, Bred and Owned by Exhibitor—First, Dunhams, on Turquois, 110346; second, W. S. Corsa, on Carjante, 109953; third, J. O. Singmaster & Son, on Keota Clarice, 114302.

Champion Mare, Bred and Owned by Exhibitor—First, Dunhams, on Pink Brilliante, 57897; second, Dunhams, on Turquois, 110346.

Get of Stallion—First, W. S. Corsa; second, J. O. Singmaster & Son; third, T. B. Bowman & Sons.

Produce of Mare—First, Dunhams; second, W. S. Corsa; third, George Eggert.

Champion Stud—First, Dunhams; second, W. S. Corsa; third, J. O. Singmaster & Son.

Five Stallions Owned by Exhibitor—First, J. O. Singmaster & Son; second. Dunhams.

Champion Stallion, Open Class—J. O. Singmaster & Son, on Lagos, 99093 (102389).

Reserve Champion—Dunhams, on Lycee, 105934 (102746).

Champion Mare, Open Class—Dunhams, on Pink Brilliante, 57897.

Reserve Champion—Dunhams, on Turquoise, 110346.

CLYDESDALE.

EXHIBITORS.

G. Andrews, Cambridge, Neb.; Barron Bros., Elkton, S. D.; H. Harris Ford, Storm Lake; Hildebrand Bros., Gladbrook; J. W. Hillman, Dana; Iowa State College, Ames.; Eben A. Jones, Bangor, Wis.; G. W. Merna, Wyoming, Ill.; James Pedley, Britt; J. P. Peterson, Herman, Neb.; Ed Shope, Milton; A. G. Soderberg, Osco, Ill.; L. C. Tice, Sully.

JUDGE .... ANDREW MCFARLAND, Palo, Iowa

AWARDS.

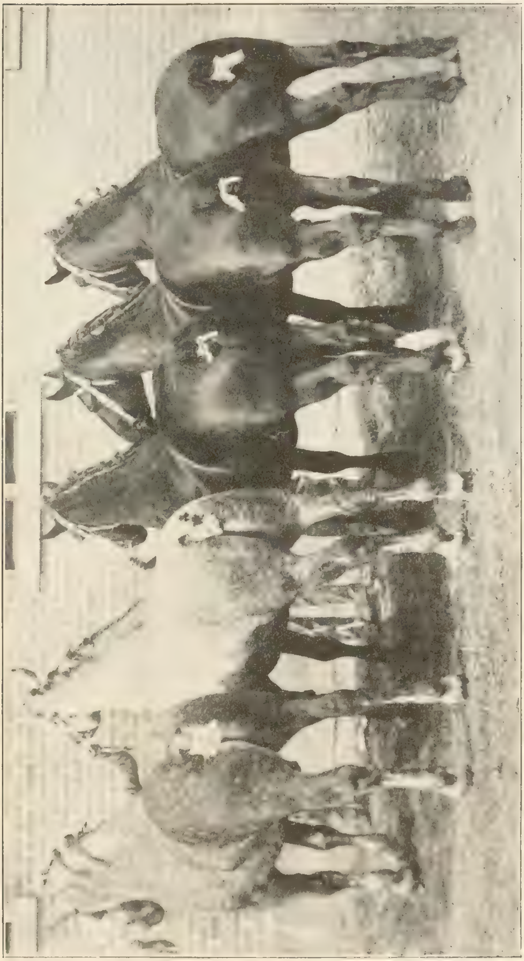
Stallion Four Years or Over—First, G. W. Merna, on Samuda, 15165 (15386); second, J. W. Hillman, on Royal Knot, 18126 (17471); third, Barron Bros., on The Pinnacle, 13860; fourth, H. Harris Ford, on Prince Cedric, 16656; fifth, A. G. Soderberg, on Rutherford, 14888.

Stallion Over Three, Under Four—First, A. G. Soderberg, on Hope's Pride; second, Barron Bros. on Baron Kilmarnock, 17871; third, H. Harris Ford, on Prince Urbin, 18075; fourth, A. G. Soderberg, on William Woodmac, 17909; fifth, H. Harris Ford, on Prince Fearless, 18112.

Stallion Over Two, Under Three—First, A. G. Soderberg ,on Fairview Prince, 19002; second, Barron Bros., on Allworthy Baron, 18556; third, H. Harris Ford, on Alexander, 18750; fourth, H. Harris Ford, on Prince Ulysses, 18749.

Stallion Foal—First, G. W. Merna; second, H. Harris Ford; third, Eben A. Jones, on Royal George; fourth, Barron Bros., on Davidson's Heir.

Stallion Three Years or Over, Bred by Exhibitor—First, A. G. Soderberg, on Hope's Pride, 18135; second, H. Harris Ford, on Prince Urbin, 18075; third,



Grand display of five Percheron stallions at the 1916 Iowa State Fair. Owned and exhibited by J. O. Singmaster, Keota, Iowa.

H. Harris Ford, on Prince Fearless, 18112; fourth, A. G. Soderberg, on Vigor, 18132.

Stallion Under Three, Bred by Exhibitor—First, H. Harris Ford, on Prince Fickland, 19354; second, A. G. Soderberg, on Baron's Prince 18949; third, Barron Bros., on Arcadia Prince, 19205; fourth, Barron Bros., on Allworthy Baron, 18556.

Yeld Mare Fours Years or Over—First, H. Harris Ford, on Princess Mae, 16807; second, A. G. Soderberg, on Osco Beauty, 18114; third, Eben A. Jones, on Grove Girl, 15887.

Mare and Foal, Mare to Count 50 Per Cent, Foal 50 Per Cent—First, G. W. Merna, on Molly, 17291, and foal; second, H. Harris Ford, on Baroness Alexander, 16785 (28929) and foal; third, H. Harris Ford, on Una, 16194 (25422) and foal; fourth, Barron Bros., on Mayflower, 15699, and foal; fifth, Barron Bros., on Fanny, 16406, and foal.

Filly Over Three, Under Four—First, Barron Bros., on Lady May, 17823; second, A. G. Soderberg, on Osco Darling, 18134; third, Eben A. Jones, on Lady May, 17606; fourth, J. W. Hillman, on Wayside Clara, 17658.

Filly Over Two, Under Three—First, Eben A. Jones, on Sweet Marie, 18302; second, J. P. Peterson; third, A. G. Soderberg, on Hope's Bell; fourth, J. P. Peterson.

Mare Foal—First, Eben A. Jones, on Molly Darling; second, Barron Bros., on Flower of Arcadia; third, H. Harris Ford; fourth, Hildebrand Bros.

Mare Three Years or Over, Bred by Exhibitor—First, Barron Bros., on Lady May, 17823; second, A. G. Soderberg, on Osco Darling, 18134; third, H. Harris Ford, on Princess Mae, 16807; fourth, A. G. Soderberg, on Osco Beauty, 18114.

Mare Under Three, Bred by Exhibitor—First, Eben A. Jones, on Sweet Marie, 18302; second, H. Harris Ford, on Princess Alice, 19355; third, Barron Bros., on Arcadia Flower, 19204; fourth, Barron Bros., on Primrose, 19203.

Champion Stallion—A. G. Soderberg, on Hope's Pride, 18135.

Reserve Champion—H. Harris Ford, on Prince Fickland, 19354.

Champion Mare—Barron Bros., on Lady May, 17823.

Reserve Champion—Eben A. Jones, on Sweet Marie, 18302.

Champion Stallion Owned in Iowa—H. Harris Ford, on Prince Fickland, 19354.

Reserve Champion—J. W. Hillman, on Royal Knot, 19126 (17471).

Champion Mare Owned in Iowa—H. Harris Ford, on Princess Mae, 16807.

Reserve Champion—H. Harris Ford, on Princess Alice, 19355.

Stallion and His Get—First, A. G. Soderberg; second, Barron Bros.; third, H. Harris Ford; fourth, Eben A. Jones.

Produce of Mare—First, Barron Bros.; second, Eben A. Jones; third, H. Harris Ford; fourth, H. Harris Ford.

Grand Display—First, A. G. Soderberg; second, Barron Bros.; third, Eben A. Jones.

Five Stallions Owned by Exhibitor—First, H. Harris Ford.

NATIONAL DRAFT HORSE BREEDERS' FUTURITY, CLYDESDALE DIVISION.

Stallions—First, H. Harris Ford, on Prince Fickland, 19354; second, Barron Bros. on Arcadia Prince, 19205; third, Barron Bros., on Donald Davidson; fourth, G. Andrews, on Bonnie Jim, 19835; fifth, Eben A. Jones, on Trooper's Baron; sixth, A. G. Soderberg, on Majesty's Best.

Fillies—First, H. Harris Ford, on Princess Alice, 19355; second, Barron Bros., on Arcadia Flower; third, Barron Bros., on Primrose; fourth, A. G. Soderberg, on Laramie; fifth, G. Andrews, on Miss Roberta, 19384; sixth, J. H. Hillman, on Wayside Bonnie, 19154; seventh, A. G. Soderberg, on Bell's Darling; eighth, G. W. Merna, on June.

First prize team of draft mares, Percheron, owned and exhibited at the 1916 Iowa State Fair by Harry Early, Liscomb, Iowa.

ENGLISH SHIRE.

EXHIBITORS.

Wm. Crownover, Hudson; Geo. Eggert, Newton; J. M. Gross, Adel; F. E. Huston, Waukee; J. L. Howard, Ankeny; J. L. Hildreth & Son, Ankeny; F. A. Huddlestun, Webster City; J. Krambeck, Marne; McCray & Fowler, Fithian, Ill.; R. E. Petefish, Slater; Smith Bros., Altoona, Iowa; G. W. Smith, Altoona; A. G. Soderberg, Osco, Ill.; Chas. H. and V. A. Sumners, Malvern; F. J. Woltman, Cedar Falls; Wm. Wright & Son, Stuart.

JUDGE ....R. B. OGILVIE, Chicago, Ill.

AWARDS.

Stallion Four Years or Over—First, F. E. Huston, on Dunsmore Sentinel, 11186; second, Wm. Wright & Son, on Dyer's King, 11190.

Stallion Over Three, Under Four—First, A. G. Soderberg, on Sylvia King, 15258.

Stallion Over Two, Under Three—First, Chas. H. & Y. A. Summers, on Rock's Golden Conqueror, 15763; second, Geo. Eggert, on King Maxwell, 16030; third, McCray & Fowler, on Royal Minstrel, 16420; fourth, F. J. Woltman, on Maple Dale Hero, 15814.

Stallion Foal—First, J. L. Howard, on Wrydeland's Tatton, 16677; second, McCray & Fowler, on Royal Fearnone; third, F. A. Huddlestun, on Edgewood Bluster.

Stallion Three Years or Over, Bred by Exhibitor—First, A. G. Soderberg, on Sylvia King, 15258.

Stallion Under Three, Bred by Exhibitor—First, Chas. H. & V. A. Summers, on Rock's Golden Conqueror, 15763; second, McCray & Fowler, on Royal Minstrel, 16420; third, McCray & Fowler, on Royal Fearnone; fourth, John Krambeck, on Superior Buscot.

Yeld Mare Four Years or Over—First, A. G. Soderberg, on Wellington Sunbeam III, 13346; second, F. E. Huston, on Pine Krest Primrose, 13225; third, Wm. Crownover, on Fuchsia, 14571 (70870); fourth, F. J. Woltman, on Moulton Primella, 10619.

Mare and Foal, Mare to Count 50 Per Cent, Foal 50 Per Cent—First, McCray on Eleventham Flora, 12795, and foal; second, J. L. Howard, on Ankeny Starlight, 10529, and foal; third, Chas. H. & V. A. Summers, on Smith's Imogene, 9903, and foal; fourth, F. A. Huddlestun, on Heale Easter Eve, 9003 (51268), and foal.

Filly Over Three, Under Four—First, Smith Bros. on Altoona Belle 2nd, 14689; second, A. G. Soderberg, on Osco Lily, 14668; third, J. L. Howard, on Queen Vivaloure, 16192.

Filly Over Two, Under Three—First, Smith Bros., on Silk Stockings, 15554; second, Smith Bros., on Altoona Maid 2d, 16113; third, McCray & Fowler, on Pilot's Royal Pride, 16423; fourth, A. G. Soderberg, on Osco Lady II, 16044.

Mare Foal—First, J. M. Gross, on Isabel; second, F. A. Huddlestun, on Edgewood Lilly; third, F. J. Woltman, on Maple Dale Sunshine; fourth, Smith Bros., on Fine Feathers.

Mare Three Years or Over, Bred by Exhibitor—First, Smith Bros., on Altoona Belle 2d, 14689; second, A. G. Soderberg, on Osco Lily, 14668; third, F. E. Huston.

Mare Under Three, Bred by Exhibitor—First, McCray & Fowler, on Royal Bonny, 16254; second, Smith Bros., on Silk Stockings, 15554; third, Smith Bros., on Altoona Maid 2d, 16113; fourth, McCray & Fowler, on Pilot's Royal Pride, 16423.

Champion Stallion—Chas. H. & V. A. Summers, on Rock's Golden Conqueror, 15763.

Reserve Champion—F. E. Huston, on Dunsmore Sentinel, 14186.

Champion Mare—McCray & Fowler, on Royal Bonny.

Reserve Champion—Smith Bros., on Silk Stockings, 15554.

Champion Stallion Owned in Iowa—Chas. H. & V. A. Summers, on Rock's Golden Conqueror, 15763.

Reserve Champion—F. E. Huston, on Dunsmore Sentinel, 14186.

Champion Mare Owned in Iowa—Smith Bros., on Silk Stockings, 15554.

Reserve Champion—Smith Bros., on Altoona Maid 2d, 16113.

Get of Sire—First, Smith Bros.; second, Chas. H. & V. A. Summers; third, F. A. Huddlestun; fourth, McCray & Fowler.

Produce of Mare—First, McCray & Fowler; second, Chas. H. & V. A. Summers; third, F. A. Huddlestun; fourth, Smith Bros.

Grand Display—First, Smith Bros.; second, McCray & Fowler

NATIONAL DRAFT HORSE BREEDERS' FUTURITY.
ENGLISH SHIRE DIVISION.

Stallions—First, John Krambeck, on Superior Buscot; second, J. L. Howard, on Ankeny Friar; third, G. W. Smith, on Altoona Masterpiece, 16352; fourth, F. A. Huddlestun, on Edgewood Major Boy, 16284; fifth, McCray & Fowler, on Royal Thumper; sixth, John Krambeck, on Sir Buscot; seventh, McCray & Fowler, on Royal George; eighth, Chas. H. & V. A. Summers, on Tom Lindlewood.

Fillies—First, McCray & Fowler, on Royal Bonny; second, F. A. Huddlestun, on Edgewood Princess 16283; third, Chas. H. & V. A. Summers, on Rampton Clara; fourth, F. A. Huddlestun, on Edgewood Eve, 16287; fifth, Chas. H. & V. A. Summers, on Ciceter Blossom; sixth, R. E. Petefish, on Lady Greyling; seventh, Smith Bros., on Altoona Maid; eighth, McCray & Fowler, on Royal Frolic.

SPECIAL PRIZES OFFERED BY THE SHIRE HORSE SOCIETY OF GREAT BRITAIN AND IRELAND.

Best Shire Stallion—Chas. H. & V. A. Summers, on Rock's Golden Conqueror, 15763.

Best Shire Mare—McCray & Fowler, on Royal Bonny.

SPECIAL PRIZES OFFERED BY THE AMERICAN SHIRE HORSE ASSOCIATION.

Champion Shire Stallion, Any Age—Chas H. & V. A. Summers, on Rock's Golden Conqueror, 15763.

Champion Shire Mare, Any Age—McCray & Fowler, on Royal Bonny.

Best American Bred Stallion, Any Age—Chas. H. & V. A. Summers, on Rock's Golden Conqueror, 15763.

Best American Bred Mare, Any Age—McCray & Fowler, on Royal Bonny.

BELGIAN.

EXHIBITORS.

Crawford & Griffin, Newton; Champlin Bros., Clinton; Wm. Crownover, Hudson; George Eggert, Newton; W. C. Estes, Packwood; R. F. French, Independence; C. G. Good, Ogden; A. W. Hawley, Fort Dodge; Chas. Irvine, Ankeny; J. A. Loughridge & Sons, Delta; Henry Lefebure, Fairfax; C. W. McDermott, Wiota; J. D. McDermott, Wiota; Markey Bros., Reynolds, Ill.; A. F. Snedeker & Sons, Altoona.

JUDGE ....ALEX GALBRAITH, DeKalb, Ill.

Prize-winning Belgian stallion shown at the 1916 Iowa State Fair by Chas. Irvine, Ankeny, Iowa.

AWARDS.

Stallion Four Years or Over--First, Chas. Irvine, on Alfred de Bree Eyck, 7959 (73424); second, Champlin Bros., on Paul de Roosbeke, 7786; third, George Eggert, on Combattant de Graty, 8214; fourth, Crawford & Griffin, on Belveder, 7246; fifth, Champlin Bros., on Figaro d'Aerdelle, 7832.

Stallion Over Three, Under Four—First, Chas. Irvine, on Irvinedale Roudy, 8428; second, Chas. Irvine, on Irvinedale Jean, 8426.

Stallion Over Two, Under Three—First, C. G. Good, on Jupiter, 8805; second, H. Lefebure & Son, on Indigine, 9487; third, C. G. Good, on Mont D'Or, 9236; fourth, R. F. French, on Jules de Ergot.

Stallion Foal—First, C. W. McDermott; second, W. C. Estes, on Monarch; third, Chas. Irvine, on Irvinedale Tommie; fourth, H. Lefebure & Son, on Clairon de Balcan.

Stallion Three Years or Over, Bred by Exhibitor—First, Chas. Irvine, on Irvinedale Roudy, 8428; second, Chas. Irvine, on Irvinedale Jean, 8426.

Stallion Under Three, Bred by Exhibitor—First, Wm. Crownover, on Porthos de Plan, 9193; second, Wm. Crownover, on Paramount Farceur, 9660; third, J. A. Loughridge & Sons; fourth, Wm. Crownover, on Paramount Wolver, 9658.

Yeld Mare Four Years or Over—First, Wm. Crownover, on Omerine, 3234; second, C. G. Good, on Margot, 4582; third, H. Lefebure & Son, on Cigarette, 1035; fourth, Chas. Irvine, on Suzetto, 4032.

Mare and Foal, Mare to Count 50 Per Cent, Foal 50 Per Cent—First, H Lefebure & Son, on Anna du Balcan, 3044, and foal; second, R. F. French, on Flora, 2810, and foal; third, C. W. McDermott, on Martha, 1085 (66669), and foal; fourth, H. Lefebure & Son, on Sarah de Vlamir, 4370, and foal;

Winner of first in the Belgian division of the Draft Futurity at the Iowa State Fair, owned and exhibited by Champlin Bros., Clinton, Iowa.

Filly Over Three, Under Four—First, H. Lefebure & Son, on Susan, 1162; second, Chas. Irvine, on Jupiter Girl, 4432.

Filly over Two, Under Three—First, Wm. Crownover, on Lista, 4869; second, Wm. Crownover, on Salome, 4871; third, Chas. Irvine, on Jupiter Queen, 4441; fourth, R. F. French, on June de Ergot.

Mare Foal—First, Chas. Irvine, on Irvinedale Ida; second, R. F. French, on Princess; third, R. F. French, on Flora II; third, R. F. French, on Daisy.

Mare Three Years or Over, Bred by Exhibitor—First, J. A. Loughridge & Sons; second, W. C. Estes, on Lady Maude, 619; third, Chas. Irvine, on Blue Belle, 2666; fourth, W. C. Estes, on Miss Nora, 620.

Mare Under Three, Bred by Exhibitor—First, Wm. Crownover, on Paramount Lola, 4987; second, Wm. Crownover, on Lista, 4869; third, Wm. Crownover, on Salome, 4871; fourth, H. Lefebure & Son, on Miranette, 4996.

Champion Stallion—Chas. Irvine, on Alfred de Bree Eyck, 7959 (73424).

Reserve Champion—C. G. Good, on Jupiter, 9905.

Champion Mare—Wm. Crownover, on Paramount Lola, 4987.

Reserve Champion—Wm. Crownover, on Lista, 4869.

Champion Stallion Owned in Iowa—Chas. Irvine, on Alfred de Bree Eyck, 7959 (73424).

Reserve Champion—C. G. Good, on Jupiter, 8805.

Champion Mare Owned in Iowa—Wm. Crownover, on Paramount Lola 4987.

Reserve Champion—Wm. Crownover, on Lista, 4869.

Get of Sire—First, Wm. Crownover; second, Wm. Crownover; third, H. Lefebure & Son; fourth, C. G. Good.

Champion Belgian stallion at the 1916 Iowa State Fair, owned and exhibited by Chas. Irvine, Ankeny, Iowa.

Produce of Mare– First, Wm. Crownover; second, C. G. Good; third, Wm. Crownover; fourth, R. F. French.

Grand Display—First, Wm. Crownover; second, Chas. Irvine; third, H. Lefebure & Son; fourth, R. F. French.

Five Stallions Owned by Exhibitor—First, Chas. Irvine.

NATIONAL DRAFT HORSE BREEDERS' FUTURITY.
BELGIAN DIVISION.

Stallions—First, Champlin Bros., on Joubt de Roosebeke, 9662; second, Wm. Crownover, on Paramount Wolver, 9658; third, Chas. Irvine, on Payton's Choice; fourth, Wm. Crownover, on Paramount Farceur, 9660; fifth, J. A. Loughridge; sixth, H. Lefebure & Sons, on Jules II, 9671; seventh, C. G. Good, on Oakdale First; eighth, C. G. Good, on Oakdale Jupiter; ninth, Champlin Bros., on Prince de Roosbeke, 9663; tenth, Chas. Irvine, on Irvinedale Robert.

Fillie—First, Wm. Crownover, on Paramount Lola; second, Chas. Irvine, on Jupiter Belle; third, C. G. Good, on Oakdale Fuscia, 5301; fourth, H. Lefebure & Son, on Sylvaette II, 5339; fifth, Wm. Crownover, on Paramount Delsant; sixth, Chas. Irvine, on Irvinedale Myrl; seventh, W. C. Estes, on Lena, 5182; eighth, George Eggert, on Lucile; ninth, Chas. Irvine, on Irvinedale Bessie; tenth, R. F. French, on Bell.

SPECIAL PRIZES OFFERED BY THE AMERICAN ASSOCIATION OF IMPORTERS AND BREEDERS OF BELGIAN DRAFT HORSES.

Stallion Four Years or Over—First ,Chas. Irvine, on Alfred de Bree Eyck, 7959 (73424); second, Champlin Bros., on Paul de Roosbeke, 7786; third, George Eggert, on Combattant de Graty, 8214; fourth, Crawford & Griffin, on Belveder, 7246; fifth, Champlin Bros., on Figaro d'Aerdelle ,7832; sixth, H. Lefebure & Son, on Farceur D'Avenues, 7906.

Stallion Three Years Old and Under Four—First, Chas. Irvine, on Irvinedale Roudy, 8428; second, Chas. Irvine, on Irvinedale Jean, 8426.'

Stallion Two Years Old and Under Three—First, C. G. Good, on Jupiter, 8805; second, H. Lefebure & Son, on Indigine, 9487; third, C. G. Good, on Mount D'Or; fourth, R. F. French, on Jules de Ergot; fifth, Wm. Crownover, on Marquis, 9172.

Stallion One Year and Under Two—First, Champlin Bros., on Joubt de Roosbeke, 9662; second, Wm. Crownover, on Paramount Wolver, 9658; third, Chas. Irvine, on Payton, Choice; fourth, Wm. Crownover, on Paramount Farceur, 9660.

Mare Four Years or Over—First, Wm. Crownover, on Omerine, 3234; second, C. G. Good, on Margot, 4582 (106605); third, H. Lefebure & Son, on Cigarette, 1035; fourth, Chas. Irvine, on Suzetto, 4032.

Mare Three Years and Under Four—First, H. Lefebure & Son, on Susan, 4162; second, Chas. Irvine, on Jupiter Girl, 4432.

Mare Two Years and Under Three—First, Wm. Crownover, on Lista, 4869; second, Wm. Crownover, on Salome, 4871; third, Chas. Irvine, on Jupiter Queen, 4441; fourth, R. F. French, on June De Ergot; fifth, Wm. Crownover, on Dinette, 4867.

Mare One Year and Under Two—First, Wm. Crownover, on Paramount Lola, 4987; second, Chas. Irvine, on Jupiter Belle; third, C. G. Good, on Oakdale Fuscia, 5301; fourth, H. Lefebure & Son, on Sylvaette II, 5339; fifth, Wm. Crownover, on Paramount Delsant, 5318; sixth, Chas. Irvine, on Irvinedale Myrl.

Champion Stallion, All Ages Competing—Chas. Irvine, on Alfred de Bree Eyck, 7959 (73424).

Reserve Champion—Champlin Bros., on Paul de Roosbeke, 7786.

Champion Mare, All Ages Competing—Wm. Crownover, on Paramount Lola, 4987.

Reserve Champion—Wm. Crownover, on Lista, 4869.

Five Stallions, Property of One Exhibitor—First, Chas. Irvine; second, Champlin Bros.

DRAFT GELDINGS AND MARES.

EXHIBITORS.

George Baker, Newton; J. August Carlson, Ogden; J. Crouch & Son, LaFayette, Ind.; C. B. Dannen & Sons, Marshalltown; Will Donaghy, Slater; Loren Dunbar, Earlham; Chas. Ebersold, Ankeny; W. C. Estes, Packwood; J. G. Fausch, Sheldahl; Chas. Finchen, Waukee; E. N. Gates, Newton; J. M. Gregory, Waukee; Albert Hitz, Slater; Hildebrand Bros., Gladbrook; Geo. F. Huston, Waukee; J. L. Howard, Ankey; J. S. Hildreth, Ankeny; F. A. Huddlestun, Webster City; Chas. Irvine, Ankeny; Frank Justice, Berwick; H. Lefebure, Fairfax; J. A. Loughridge & Son, Delta; C. W. McDermott, Wiota: Smith Bros., Altoona; O. R. Smith, Altoona; Chas. H. & V. A. Summers, Malvern; E. O. Spear, Waukee; P. C. Thompson, Ankeny; W. L. Van Meter, Adel.

JUDGE ....W. J. KENNEDY, Sioux City, Iowa

AWARDS.

Gelding or Mare Four Years or Over—First, F. A. Huddlestun, on Edgewood's Masterpiece; second Chas. Irvine, on King; third, Will Donaghy, on Blaze; fourth, J. L. Howard, on Dolly; fifth, Geo. F. Huston, on Bella.

Gelding or Mare Three Years and Under Four—First, Chas. H. & V. A. Summers; second, J. M. Gregory, on Beauty; third, C. H. Ebersold, on Dan;

First prize aged Belgian mare at the Iowa State Fair, owned and exhibited by Wm. Crownover, Hudson, Iowa.

fourth, C. H. Ebersold, on Nick; fifth, Chas. H. & V. A. Summers.

Gelding or Mare Two Years and Under Three—First, J. August Carlson, on Mack; second, J. G. Fausch, on Molly; third, Chas. H. & V. A. Summers; fourth, J. S. Hildreth, on Daisy; fifth, J. S. Donaghy, on Queen.

Gelding or Mare One Year and Under Two—First, J. S. Hildreth, on Molly; second, Smith Bros., on Bob; third, Frank Justice, on Tom; fourth, Chas. H. & V. A. Summers; fifth, J. G. Fausch, on Flossie.

Horse or Filly Foal—First, Geo. F. Huston, on Ruby; second, Albert Hitz, on Alleman Banker; third, W. C. Estes, on Rowdy; fourth, P. C. Thompson, on Bourdon; fifth, J. S. Hildreth, on Captain.

Farmer's Team—First, Harry P. Early; second, F. A. Huddlestun; third, C. B. Dannen & Son; fourth, Chas. Irvine; fifth, Chas. H. & V. A. Summers.

Gelding or Mare Three Years or Over—First, J. Crouch & Son; second, Chas. H. & V. A. Summers; third, J. Crouch & Son; fourth, Chas. Irvine; fifth, George Baker.

Draft Team in Harness—First, J. Crouch & Son; second, J. Crouch & Son; third, Chas. H. & V. A. Summers; fourth, J. G. Fausch.

Champion Gelding or Mare—J. Crouch & Son.

Reserve Champion—Chas. H. & V. A. Summers.

Four-Horse Team—J. Crouch & Son.

Six-Horse Team—J. Crouch & Son.

HORSE SHOW CLASSES.

EXHIBITORS.

J. H. Adkisson, Albia; Thomas Bass, Mexico, Mo.; Brown & Mooer, Columbia, Mo.; Bruce G. Eaton, Eaton, Colo.; E. A. Elliott, Des Moines; Dr. A. M. Henderson, Aurora, Ill.; Bert Harmon, Des Moines; Hamilton Bros., Keota; Bert Harris, Oskaloosa; E. E. Ives, Oskaloosa; Loula Long, Kansas City, Mo.; T. W. Marshall, Des Moines; J. A. Mason, Carlisle; Morgan Horse Farm, Plainfield; E. D. Moore, Columbia, Mo.; Mr. and Mrs. O. J. Mooers, Des Moines; C. E. Monahan, Des Moines; Geo. J. Peak, Winchester, Ill.; Joe Prime, Oskaloosa; Bruce Robinson, Riverside; C. F. Storm, Dexter; Mrs. C. W. Walford, Des Moines; F. R. Wilson, Colo; Woodin Farms, Lake Forest, Ill.

JUDGES ....

WALTER PALMER, Ottawa, Ill.
E. B. CLANCEY, Guelph, Can.
W. A. DOBSON, Des Moines, Iowa.
W. J. KENNEDY, Sioux City, Iowa.
JAMES RUSH LINCOLN, Ames, Iowa.

AWARDS.

ROADSTERS.

Stallion, Mare or Gelding—First, Loula Long, on Animation; second, Loula Long, on Anticipation; third, Hamliton Bros., on Buster Bozant, 59463; fourth, Mr. and Mrs. O. J. Mooers, on Ladd McKinney.

Pair of Stallions, Mare or Geldings—First, Loula Long, on Animation and Anticipation; second, Hamilton Bros. on Buzter Bozant and mate; third, J. H. Adkisson.

RUNABOUTS.

Stallion, Mare or Gelding—First, Mr. and Mrs. O. J. Mooers, on Troublesome Tommy; second, Mr. and Mrs. O. J. Mooers, on Advance Guard; third, Mr. and Mrs. O. J. Mooers, on The Dainty Miss; fourth, Hamilton Bros., on Buster Bozant, 59463.

Pair of Stallions, Mares or Geldings—First, Mr. and Mrs. O. J. Mooers, on Troublesome Tommy and Advance Guard; second, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket and The Dainty Miss; third, Bruce Robinson, on Peaches and mate.

LADIES' TURNOUT.

Single Mare or Gelding—Mr. and Mrs. O. J. Mooers, on The Spring Maid; second, Mr. and Mrs. O. J. Mooers, on Lady Windemere; third, Mr. and Mrs. O. J. Mooers, on Adora; fourth, Hamilton Bros.

Pair of Mares or Geldings or Mare and Gelding—First, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket and The Dainty Miss; second, Mr. and Mrs. O. J. Mooers, on The Spring Maid and mate; third, Mr. and Mrs. O. J. Mooers, on Adora and mate.

HIGH STEPPERS AND PARK HORSES.

Stallion, Mare or Gelding, 15-2 and over—First, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket; second, Mr. and Mrs. O. J. Mooers, on The Dainty Miss; third, Dr. A. M. Henderson, on Gold Dust, 1754; fourth, Mr. and Mrs. O. J. Mooers, on Adora.

Stallion, Mare or Gelding, 15-2 and over—First, Mr. and Mrs. O. J. Mooers, on the Spring Maid; second, Mr. and Mrs. O. J. Mooers, on the Professor; third, Mr. and Mrs. O. J. Mooers, on Mr. Risley; fourth, Mr. and Mrs. O. J. Mooers, on Johnnie Burns.

Pair Stallions, Mares or Geldings, 15 to 15-2—First, Mr. and Mrs. O. J. Mooers, on The Spring Maid and mate; second, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket and The Dainty Miss; third, Mr. and Mrs. O. J. Mooers, on Advance Guard and Adora; fourth, Bruce Robinson, on Peaches and mate.

Pair Stallions, Mares or Geldings over 15-2—First, Mr. and Mrs. O. J. Mooers, on Johnny Burns and mate; second, Mr. and Mrs. O. J. Mooers, on Mr. Risley and mate.

First prize Belgian mare and foal at 1916 Iowa State Fair, owned and exhibited by Henry Lefebure, Fairfax, Iowa.

Stallion, Mare or Gelding, any height, Horse alone to be considered—First, Mr. and Mrs. O. J. Mooers, on The Spring Maid and mate; second, Mr. and Mrs. O. J. Mooers; third, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket and The Dainty Miss; fourth, Mr .and Mrs. O. J. Moers, on Advance Guard and Adora.

GIG HORSES.

Horses not exceeding 15-2—First Mr. and Mrs. O. J. Mooers, on Advance Guard; second, Mr. and Mrs. O. J. Mooers, on The Dainty Miss; third, Mr. and Mrs. O. J. Mooers, on Troublesome Tommy; fourth, Dr. A. M. Henderson, on Gold Dust 1754.

Horses over 15-2—First, Mr. and Mrs. O. J. Mooers, on The Professor; second, Mr. and Mrs. O. J. Mooers, on The Spring Maid; third, Mr. and Mrs. O. J. Mooers, on Mr. Risley.

TANDEMS.

Tandem Team, Wheeler, Over 15-2—First, Mr. and Mrs. O. H. Mooers, on Mr. Risley and mate; second, Mr. and Mrs. O. J. Mooers, on Johnny Burnes and mate; third, Bruce Robinson, on Peaches and mate.

Tandem Team, Wheeler, Under 15-2—First, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket and The Dainty Miss; second, Mr. and Mrs. O. J. Mooers, on Adora and Advance Guard.

Tandem Team, Any Size, Horses Alone to be Considered—First, Mr. and Mrs. O. J. Mooers, on The Pick of the Basket and The Dainty Miss; second, Mr. and Mrs. O. J. Mooers, on Advance Guard and Adora.

UNICORNS.

Unicorn Team, 15-1 and Over—First, Mr. and Mrs. O. J. Mooers; second, Mr. and Mrs. O. J. Mooers.

FOUR-IN-HAND.

Road Four—First, Mr. and Mrs. O. J. Mooers.

Park Four—First, Mr. and Mrs. O. J. Mooers.

CHAMPIONSHIP HARNESS HORSE.

Champion Harness Stallion—First, Mr. and Mrs. O. J. Mooers, on Advance Guard.

Champion Harness Mare or Gelding—First, Mr. and Mrs. O. J. Mooers, on The Spring Maid.

Reserve Champion—First, Mr. and Mrs. O. J. Mooers, on Lady Windermere.

HUNTERS AND HIGH JUMPERS.

Light Weight Hunters, up to Carrying 150 Pounds—First, Woodin Farms, on Alston; second, Bert Harris, on Garland Rose; third, Thomas Bass, on Question Mark.

Middle Weight Hunters, up to Carring 175 Pounds—First, Woodin Farms, on Lady Phaeton; second, Woodin Farms, on The Whip.

Heavy Weight Hunters, up to Carrying 200 Pounds—First, Woodin Farms, on The Master; second, Woodin Farms, on The Huntsman; third, Thomas Bass, on Sir Walter; fourth, Joe Prine, on Overland.

Lady's Hunter, Ridden by Lady—First, Woodin Farms, on The Master; second, Thomas Bass, on Sir Walter; third, Woodin Farms, on Lady Phaeton; fourth, Woodin Farms, on Alston.

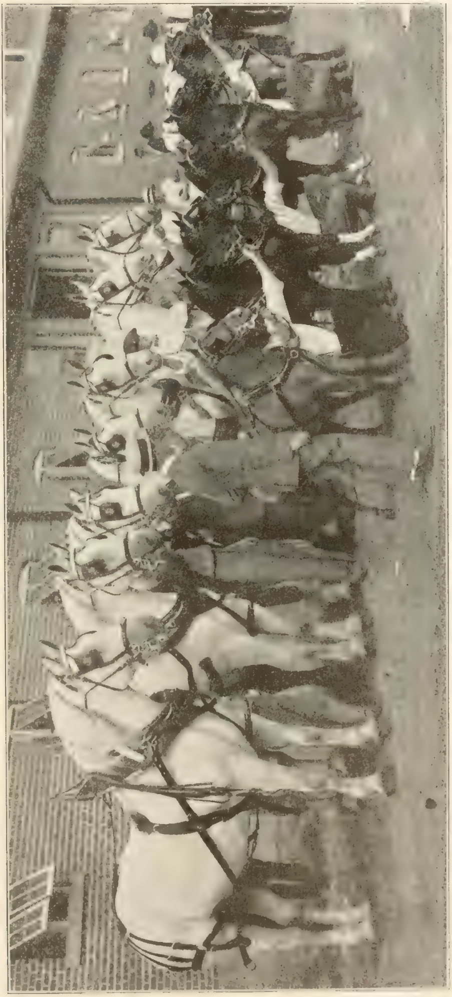
Pair Light Weight Hunters, up to Carrying 150 Pounds—First, Woodin Farms, on Alston and mate.

Pair Middle Weight Hunters, up to Carrying 175 Pounds—First, Woodin Farms, on Lady Phaeton and mate.

Pair Ladies' Hunters, Ridden by Ladies—First, Woodin Farms, on Alston and Lady Phaeton; second, Woodin Farms, on The Master and The Huntsman.

Champion Hunter—First, Woodin Farms, on Alston.

Reserve Champion—First, Woodin Farms, on The Huntsman.



Where equine extremes met at the 1916 Iowa State Fair.

High Jumpers—First, Woodin Farms, on The Huntsman; second, Woodin Farms, on The Whip; third, Thomas Bass, on Sir Walter; fourth, Woodin Farms, on The Master.

MILITARY HORSES.

Gelding Suitable for Officers' Mount—Second, Bruce G. Eaton, on Blees McDonald.

Stallion Suitable to Sire Cavalry Remounts—First, Thomas Bass on Sutton Star; second, F. R. Wilson on Crookston; third, Morgan Horse Farm on Daniel Hudson; fourth, Morgan Horse Farm on Tommy Dean.

SADDLE HORSES.

EXHIBITORS.

Brown & Moore, Columbia, Mo.; Thomas Bass, Mexico, Mo.; Bruce G. Eaton, Eaton, Colo.; H. F. Griffin, Riverside; Bert Harris, Oskaloosa; Hamilton Bros., Keota; Mrs. Harry B. Kinnard, Des Moines; Loula Long, Kansas City, Mo.; Mr. and Mrs. O. J. Mooers, Des Moines; E. D. Moore, Columbia, Mo.; C. E. Monahan, Des Moines; Joe Prine, Oskaloosa; B. F. Redman, Oskaloosa; Bruce Robinson, Riverside; C. F. Storm, Dexter; Woodin Farms, Lake Forest, Ill.

JUDGE .... WALTER PALMER, Ottawa, Ill.

AWARDS.

FIVE GAITED.

Gelding or Mare Four Years or Over—First, Loula Long, on Maurine Fisher; second, Thomas Bass on Bohemian Music; third, Mr. and Mrs. O. J. Mooers, on Lawrence Barrett; fourth, B. F. Redman, on Frances Highlander; fifth, Loula Long, on Prince Melbourne.

Gelding or Mare Over Three, Under Four—First, Thomas Bass, on Bohemian Actress.

Stallion on Four Years and Over—First, Loula Long, on My Major Dare; second, Loula Long, on Kentucky's Best; third, Thomas Bass on Sutton Star; fourth, Hamilton Bros. on Kentucky Champ Clark 5602; fifth, Bruce Robinson, on Rex Ortiz 5813.

Stallion Over Three, Under Four—First, Thomas Bass, on My Choice Dare.

Stallion Two Years Old Shown to Halter—First, C. F. Storm, on Iowa King 6987; second, Thomas Bass, on Denmark Peavine; third, Loula Long, on Missouri Major; fourth, C. E. Monahan, on Rhoda Royal.

Mare Two Years Old Shown to Halter—First, B. F. Redman, on Ruth Ridge 12461; second, Loula Long, on Arletha Dare; third, Hamilton Bros., on Virginia Leor 13355.

WALK, TROT OR CANTER.

Mare or Gelding Any Age—First, Loula Long, on Gretta C.; second, Woodin Farms, on Anne Pennington; third, Bruce G. Eaton, on Princess Eugenia 6558; fourth, Mr. and Mrs. O. J. Mooers, on Chloe Malone; fifth, Thomas Bass, on Bohemian Actress.

Mare or Gelding of suitable Type Ridden by Lady—First, Bruce G. Eaton, on Princess Eugenia 6558; second, Mr. and Mrs. O. J. Mooers, on Lawrence Barrett; third, Woodin Farms, on Anne Pennington; fourth, Thomas Bass,

LADIES' RIDING.

Best Lady or Girl Rider on Suitable Mount—First, Mr. and Mrs. O. J. on Chestnut Chief.

Mooers; second, E. Rasmussen; third, Mrs. Harry B. Kinnard, on Princess Charming; fourth, Elizabeth Redman.

COMBINED HARNESS AND SADDLE HORSES.

Stallion, Mare or Gelding, Any Age, Five Gaited—First, Loula Long, on Kentucky Best; second Loula Long, on Maurine Fisher; third, Thomas Bass, on Bohemian Music; fourth, Mr. and Mrs. O. J. Mooers, on Lawrence Barrett; fifth, Hamilton Bros., on Kentucky Champ Clark.

Stallion, Mare or Gelding, Any Age, Three Gaited—First, Loula Long, on Gretta C.; second, Woodin Farms, on Anne Pennington; third, Mr. and Mrs. O. J. Mooers, on Lawrence Barrett; fourth, Thomas Bass, on Bohemian Actress; fifth, Hamilton Bros., on Kentucky Champ Clark.

HIGH SCHOOL HORSES.

Stallion, Mare or Gelding, Any Age—First, Thomas Bass, on Belle Beach; second, Hamilton Bros., on Topsy McDonald; three, Bruce Robinson, on Rex Ortiz of Denmark 5813.

FIVE GAITED, OWNED IN IOWA.

Mare or Gelding Three Years or Over—First, Hamilton Bros., on Topsy McDonald; second, B. F. Redman, on Frances Highlander 10718; third, Hamilton Bros., on Charlie Chaplin; fourth, C. F. Storm, on Lady McDonald.

Stallion Three Years or Over—First, Hamilton Bros., on Kentucky Champ Clark; second, Bruce Robinson, on Rex Ortiz of Denmark 5813; third, C. E. Monahan, on Montgomery.

SPECIAL PRIZES OFFERED BY THE AMERICAN SADDLE HORSE BREEDERS' ASSOCIATION.

Stallion or Mare, Three Years Old or Under, Shown to Halter—First, H. F. Griffin, on Iowa's Pride 7652; second, B. F. Redman, on Ruth Ridge 12461.

STANDARD BRED TROTTERS.

EXHIBITORS.

J. H. Adkisson, Albia; F. E. Barton, Des Moines; H. F. Griffin, Riverside; Hamilton Bros., Keota; Bert Harmon, Des Moines; T. W. Marshall, Des Moines; Mr. and Mrs. O. J. Mooers, Des Moines; C. E. Monahan, Des Moines; Geo. J. Peak, Winchester, Ill.; Bruce Robinson, Riverside; C. F. Storm, Dexter; F. R. Wilson & Son, Colo.; I. Ross Thompson, Des Moines; Mrs. C. W. Wolford, Des Moines; J. M. Hemingway, Hampton.

JUDGE ....E. B. CLANCY, Guelph, Can.

AWARDS.

Stallion Four Years or Over—First, Hamilton Bros., on Buster Bozant 59463; second, Mr. and Mrs. O. J. Mooers, on Lad McKinney; third, F. R. Wilson, on Crookston 55894; fourth, Bert Harmon on Ray Templeton 56769.

Stallion over Three, Under Four—First, E. A. Elliott, on Victor Bingen 61024.

Stallion Over Two, Under Three—First, J. M. Hemingway; second, E. A. Elliott, on Black Panicus 59809.

Stallion Over One, Under Two—First, E. A. Elliott, on Bingen's Best; second, H. F. Griffin, on Iowa's Pride 7652.

Stallion Foal—First, E. A. Elliott, on Bart Bingen; second, J. H. Adkisson, on J. H.; third, E. A. Elliott, on Polly E.

Yeld Mare, Four Years or Over—First, F. E. Barton, on Marie Look Sir.

Filly Over Three, Under Four—First, I. Ross Thompson, on Ellen Woodrow; second, Bert Harmon, on Jessie Bingen; third, C. E. Monahan, on Looketta Bingen.

Filly Over Two, Under Three—First, E. A. Elliott, on Aena; second, C. E. Monahan, on Jessie Albingen; third, C. F. Storm, on Miss Detroit; fourth, E. A. Elliott, on Pink Tea.

Filly Over One, Under Two—First, E. A. Elliott, on Silver Tail; second, Mrs. C. W. Wolford, on Flip Albingen.

Mare Foal—First, E. A. Elliott, on Beauty; second, Mrs. C. W. Wolford.

Mare and Foal, Mare to Count 50 Per Cent, Foal 50 Per Cent—First, J. H. Adkisson, on Black Biddy and foal; second, E. A. Elliott, on Loga's Best and foal; third, E. A. Elliott, on Lola C. and foal; fourth, E. A. Elliott, on Emily E. and foal.

Champion Stallion—Hamilton Bros., on Buster Bozant 59463.

Reserve Champion—E. A. Elliott, on Victor Bingen 61024.

Champion Mare—F. E. Barton, on Marie Look Sir.

Reserve Champion—E. A. Elliott, on Aena.

Get of Stallion—First, E. A. Elliott; second, J. H. Adkisson.

Produce of Mare—First, Bert Harmon; second, J. H. Adkisson; third E. A. Elliott.

MORGAN.

EXHIBITORS.

C. T. Ayers, Osceola; Rev. H. L. Buettner, Mallard; Morgan Horse Farm, Plainfield.

JUDGE ....W. A. DOBSON, Des Moines, Iowa.

AWARDS.

Stallion, Four Years or Over—First, Morgan Horse Farm, on Montgomery 6684; second, C. T. Ayers, on Morgan Star; third, Morgan Horse Farm, on Daniel Hudson 5762.

Stallion, Three Years, Under Four—First, Morgan Horse Farm, on Tommy Dean 6873.

Stallion, Two Years, Under Three—First, Morgan Horse Farm, on Archy L. 6941.

Stallion, Over One, Under Two—First, Morgan Horse Farm, on Fred Dean, Vol. 4.

Stallion Foal—First, C. T. Ayers, on Royal Star, Vol. 4; second, Morgan Horse Farm, on Jiggs, Vol. 4.

Yeld Mare, Four Years or Over—First, C. T. Ayers, on Patience, Vol. 4.

Mare, Over Three, Under Four—First, Morgan Horse Farm, on Lucy B., Vol. 4.

Filly, Over Two, Under Three—First, Morgan Horse Farm, on Polly Taylor, Vol. 4.

Filly, Over One, Under Two—First, Rev. H. L. Buettner, on Flossy Hudson, Vol. 4.

Mare Foal—First, C. T. Ayers, on Bird, Vol. 4; second, C. T. Ayers, on Nellie Star, Vol. 4.

Brood Mare with Foal at Side—First, Morgan Horse Farm, on Ruperta, Vol. 3, and foal; second, C. T. Ayers, on Ruth, Vol. 4, and foal; third, C. T. Ayers, on Young Nellie, Vol. 3, and foal.

Champion Stallion—Morgan Horse Farm, on Montgomery 6684.

Reserve Champion—Morgan Horse Farm, on Tommy Dean 6873.

Champion Mare—Morgan Horse Farm, on Polly Taylor, Vol. 4.

Reserve Champion—Morgan Horse Farm, on Ruperta, Vol. 3.

Get of Stallion—First, Morgan Horse Farm.

Grand Display—First, C. T. Ayers.

SPECIAL PREMIUM OFFERED BY THE MORGAN HORSE CLUB.

Stallion, Mare or Gelding, Conforming Most Truly to the Ancient Morgan Type—First, Morgan Horse Farm, on Montgomery 6684; second, Morgan Horse Farm, on Tommy Dean 6873.

HACKNEY.

EXHIBITORS.

Chas. E. Bunn, Peoria, Ill.; Dr. A. M. Henderson, Aurora, Ill.; Geo. E. Heyl, Washington, Ill.; Mr. and Mrs. O. J. Mooers, Des Moines.

JUDGE ....E. B. CLANCEY, Guelph, Can.

AWARDS.

Stallion Over Three, Under Four—First, Dr. A. M. Henderson, on Gold Dust, 1754.

Yeld Mare Four Years or Over—First, Mr. and Mrs. O. J. Mooers, on Witcham Elgitha, 1931; second, Mr. and Mrs. O. J. Mooers, on Woodroyd Queen.

Mare Over Three, Under Four - First, Mr. and Mrs. O. J. Mooers, on Adora; second, Chas. E. Bonn, on Florence, 2854.

Filly Over Two, Under Three—First, Chas. E Bunn, on The Mermaid.

Filly Over One, Under Two—First, Chas. E. Bunn, on Moonbeam, 3067.

Champion Stallion—First, Dr. A. M. Henderson on Gold Dust, 1754.

Champion Mare—Mr. and Mrs. O. J. Mooers, on Witcham Elgitha, 1931.

Reserve Champion—Mr. and Mrs. O. J. Mooers, on Adora.

Produce of Mare—First, Mr. and Mrs. O. J. Mooers; second, Chas. E. Bunn.

Grand Display—Mr. and Mrs. O. J. Mooers.

SPECIAL PRIZES OFFERED BY THE AMERICAN HACKNEY HORSE SOCIETY.

Champion Stallion—Dr. A. M. Henderson, on Gold Dust, 1754.

Champion Mare—Mr. and Mrs. O. J. Mooers, on Witcham Elgitha, 1931.

WELSH PONIES.

EXHIBITORS.

Chas. E. Bunn, Peoria, Ill.; H. C. Davis, Ames; Geo. A. Heyl, Washington, Ill.; Mrs. Adam Stirling & Son, Des Moines; Woodin Farms, Lake Forest, Ill.

JUDGE ....W. J. KENNEDY, Sioux City, Iowa

AWARDS.

Stallion Four Years or Over—First, Geo. A. Heyl, on Gwindy Duke, 586; second, Chas. E. Bunn, on John Brown, 755; third, Woodin Farms, on Gwindy True Blue, 546.

First prize two-year-old Belgian stallion at the 1916 Iowa State Fair, owned and exhibited by C. G. Good, Ogden, Iowa.

Stallion Three Years, Under Four—First, Geo. A. Heyl, on Royal Gwindy, 706.

Stallion Two Years, Under Three—First, Chas. E. Bunn, on Ten Pins, 883.

Stallion or Mare Foal—First, Geo. A. Heyl; second, Chas. E. Bunn, on Velvet, 882.

Mare Four Years or Over—First, Chas. E. Bunn, on Keepsake, 201; second, Chas. E. Bunn, on Bess, 481; third, Geo. A. Heyl, on Llewyn Peggy, 482.

Mare Three Years, Under Four—First, Geo. A. Heyl, on Dinarth Fancy, 801; second, Chas. E. Bunn, on Miss Roiket, 880.

Mare Two Years, Under Three—First, Chas. E. Bunn, on Talais Gift, 881.

Stallion in Harness—First, Geo. A. Heyl, on Gwindy Duke, 586; second, Chas. E. Bunn, on John Brown, 755; third, Geo. A. Heyl, on Royal Gwindy, 706; fourth, Chas. E. Bunn, on Ten Pins.

Gelding or Mare in Harness—First, Geo. A. Heyl, on Dinarth Fancy, 801; second, Chas. E. Bunn, on Keepsake, 201; third, Chas. E. Bunn, on Bess, 481; fourth, Geo. A. Heyl, on Peggy.

Pair of Ponies in Harness—First, Chas. E. Bunn, on John Brown and Bess; second, Geo. A. Heyl, on Royal Gwindy and Gwindy Duke; third, Chas. E. Bunn, on Ten Pins and Talais Gift.

Tandem Team—First, Geo. A. Heyl on Royal Gwindy and Gwindy Duke; second, Chas. E. Bunn, on John Brown and Keepsake.

Pony Under Saddle—First, Chas. E. Bunn, on Bess, 481; second, Woodin Farms, on Foregote Polly, 3009; third, Geo. A. Heyl, on Llewyn Peggy.

Four-in-Hand—First, Chas. E. Bunn; second, Geo. A. Heyl.

Champion Stallion, Mare or Gelding, in Harness—Geo. A. Heyl, on Dinarth Fancy, 801.

Reserve Champion—Geo. A. Heyl, on Gwindy Duke, 586.

SHETLAND PONIES.

EXHIBITORS.

Chas. E. Bunn, Peoria, Ill.; George Birdson, Panora; M. E. Bridgeford & Son, Joy, Ill.; H. C. Davis, Ames; Mary Louise Harbach, Des Moines; Geo. A. Heyl, Washington, Ill.; Jones' Pony Farm, Des Moines; Redman Bros., Altoona; Mrs. Adam Stirling, Des Moines; J. C. Thompson, Perry; F. R. Wilson & Son, Colo; D. G. Welty, Nevada; Woodin Farms, Lake Forest, Ill.

JUDGE ....W. J. KENNEDY, Sioux City, Iowa

AWARDS.

Stallion Four Years or Over—First, Geo. A. Heyl, on King Larigo, 8778; second, Chas. E. Bunn, on Prince Patten, 17205; third, M. E. Bridgeford & Son, on Mr. Brown; fourth, M. E. Bridgeford & Son, on King Cole.

Stallion, Three Years, Under Four—First, Chas. E. Bunn, on Lord Go Bang, 14315; second, Geo. A. Heyl, on Trinket Larigo, 14950; third, Woodin Farms, on Perfection Larigo, 14946; fourth, Chas. E. Bunn, on St. Valentine.

Stallion Two Years, Under Three—First, Chas. E. Bunn, on The Best of All, 17200; second, Geo. A. Heyl, on Triumph Larigo, 15905; third, D. G. Welty, on Laddie Lobdill, 15251; fourth, M. E. Bridgeford & Son, on Piper Heidsieck.

Stallion Over One, Under Two—Geo. A. Heyl, on Prince Larigo, 16932; second, M. E. Bridgeford & Son, on Lanlac; third, D. G. Welty, on Ben Hur W., 16598; fourth, Bridgeford & Son, on Marvin, 17044.

Stallion or Mare Foal—First, Chas. E. Bunn, on Vesuvius, 17203; second, George Birdson; third, J. C. Thompson; fourth, George Birdson.

Mare Four Years or Over—First, Chas. E. Bunn ,on Ovilta, 10620; second, M. E. Bridgeford & Son, on Queen of May; third, Chas. E. Bunn, on Revelation, 14345; fourth, M. E. Bridgeford & Son, on Eunice.

Mare Two Years and Under Three—First, M. E. Bridgeford & Son, on Josephine; second, D. G. Welty, on Fanch Gem; third, Geo. A. Heyl, on Maple Leaf Larigo, 15912; fourth, Chas. E. Bunn, on Theolita.

First prize Belgian stallion under three years at the Iowa State Fair 1916, bred and exhibited by Wm. Crownover, Hudson, Iowa.

Mare Three Years, Under Four—First, Geo. A. Heyl, on Marigold Silver Tips, 17198; second, M .E. Bridgeford & Sons, on Lily B.; third, D. G. Welty, on Queen Larigo; fourth, Chas. E. Bunn, on Nettie Cole, 14155.

Mare Over One, Under Two—First, Geo. A. Heyl, on Larigo's Primrose; second, M. E. Bridgeford & Son, on Miss Bonnie; third, D. G. Welty, on Sunrise B. W., 16594; fourth, Jones' Pony Farm, on Waggarety.

Gelding or Mare in Harness—First, Chas. E. Bunnon Quapho; second, Chas. E. Bunn, on Ovilta; third, M. E. Bridgeford & Son, on Eunice; fourth, M. E. Bridgeford & Son, on Queen of May.

Stallion in Harness—First, Geo. A. Heyl, on King Larigo, 8778; second, Chas. E. Bunn, on Prince Patton; third, M. E. Bridgeford & Son, on Mr. Brown, 12915; fourth, Geo. A. Heyl on King Lear.

Pair of Ponies in Harness—First, Chas. E. Bunn, on Prince Patton and and Quapho; second, Geo. A. Heyl, on King Larigo and King Lear; third, D. G. Welty, on Priscilla Lady and Lady Starlight; fourth, Chas. E. Bunn, on Ovilta and mate.

Four-in-Hand—First, Chas. E. Bunn; second, Geo. A. Heyl; third, M. E. Bridgeford & Son; fourth, D. G. Welty.

Tandem Team—First, Chas. E. Bunn, on Prince Patton and mate; second, Geo. A. Heyl, on King Larigo and King Lear; third, D. G. Welty, fourth, Chas. E. Bunn, on Ovilta and mate.

Pony Under Saddle—First, Mary Louise Harbach, on Pansy H., 6076; second, Jones' Pony Farm, on Queen of Flett, 11968; third, D. G. Welty, on Lady Starlight, 8706; fourth, F. R. Wilson & Son.

Four Colts, Get of One Sire—First, Chas. E. Bunn; second, Geo. A. Heyl; third, M. E. Bridgeford & Son; fourth, Chas. E. Bunn.

Champion Stallion, Mare or Gelding, in Harness—Geo. A. Heyl, on King Larigo, 8778.

Reserve Champion—M. E. Bridgeford & Son, on Queen of May.

Grand Display—First, Chas. E. Bunn; second, Geo. E. Heyl; third, M. E. Bridgeford & Son; fourth, D. G. Welty.

LOCAL OWNED IN IOWA.

Pony in Harness—First, D. G. Welty, on Priscilla; second, D. G. Welty, on Ruby; third, Mary Louise Harbach, on Pansy H., 6076; fourth, Jones' Pony Farm, on Wagga Wagga, 8847.

Pair Ponies in Harness—First, D. G. Welty, on Priscilla and mate; second, D. G. Welty, on Donna and Ruby; third, Jones' Pony Farm, on Wagga Wagga and Queen of Flett.

Pony Under Saddle—First, Mary Louise Harbach, on Pansy H., 6076; second, Jones' Pony Farm, on Queen of Flett, 11968; third, George Birdson; fourth, D. G. Welty, on Lady Starlight.

HACKNEY PONIES AND OTHERS.

EXHIBITORS.

George Birdson. Panora; Robert Barnes. Oskaloosa; Chas. E. Bunn. Peoria. Ill.; Thomas Bass, Mexico, Mo.; Geo. A. Heyl, Washington, Ill.; Geo. J. Peak, Winchester, Ill.; Redman Bros., Altoona; Mrs. Adam Stirling & Son, Des Moines; F. R. Wilson & Son, Colo.

JUDGE ....W. J. KENNEDY, Sioux City, Iowa

AWARDS.

Stallion Three Years or Over—First, Chas. E. Bunn, on Nipper, Jr.; second, Chas. E. Bunn, on Fire Lad; third, Geo. A. Heyl, on Belthorpe Pomposity, 1515.

Mare Three Years or Over—First, Geo. A. Heyl, on Dinarth Magic, 2894; second, Geo. A. Heyl, on Dinarth Gem, 22911; third, Geo. A. Heyl, on Dinarth Dot, 22910; fourth, Chas. E. Bunn, on Florence.

Pony in Harness—First, Geo. A. Heyl, on Dinarth Dot, 22910; second, Geo A. Heyl, on Dinarth Gem, 22911; third, Geo. A. Heyl, on Trillo Magic.

Pony Under Saddle—First, Chas. E. Bunn, on Brown Bill; second, F. R Wilson & Son, on Snip; third, F. A. Wilson & Son, on Dewey.

Pair Ponies in Harness—First, Geo. A. Heyl, on Dinarth Magic and Trillo Magis; second, Geo. A. Heyl, on Dinarth Dot and Dinarth Gem; third, Chas. E. Bunn, on Florence and mate.

Tandem Team—First, Geo. A. Heyl, on Dinarth Magic and Trillo Magic; second, Chas. E. Bunn, on Florence and mate; third, Geo. A. Heyl, on Dinarth Dot and Dinarth Gem.

Four-in-Hand—First, Geo. A. Heyl; second, Chas. E. Bunn; third, F. R Wilson & Son.

MULES.

EXHIBITORS.

Wyatt Carr, Collins; Amos B. Carr, Collins; F. L. Hutson & Son, State Center.

JUDGE ....W. A. DOBSON, Des Moines, Iowa

AWARDS.

Mule Four Years or Over—First, Wyatt Carr, on Topsy; second, Wyatt Carr, on Molly McConnell; third, Amos B. Carr.

Mule Over Three, Under Four—First, Amos B. Carr.

Mule Over Two, Under Three—First, Amos B. Carr; second, Wyatt Carr, on Queen.

Mule Over One, Under Two—First, Amos B. Carr.

Mule Under 15 Hands—First, Wyatt Carr, on Jerry; second, Wyatt Carr on Jack.

Pair Mules Over 2400 Pounds, Shown in Harness—First, Wyatt Carr, on Topsy and Molly McConnell.

Pair Mules Under 2400 Pounds, Shown in Harness—First, Amos B. Carr.

Five Mules, Any Age—First, Wyatt Carr; second, Amos B. Carr.

Champion Mules, Any Age—Wyatt Carr, on Topsy.

Champion Pair of Mules, Any Age—Wyatt Carr, on Topsy and Molly McConnell.

JACKS.

EXHIBITORS.

George Baker, Newton; Wyatt Carr, Collins; Illinois Horse Co., Walford; J. A. Loughridge & Sons, Delta.

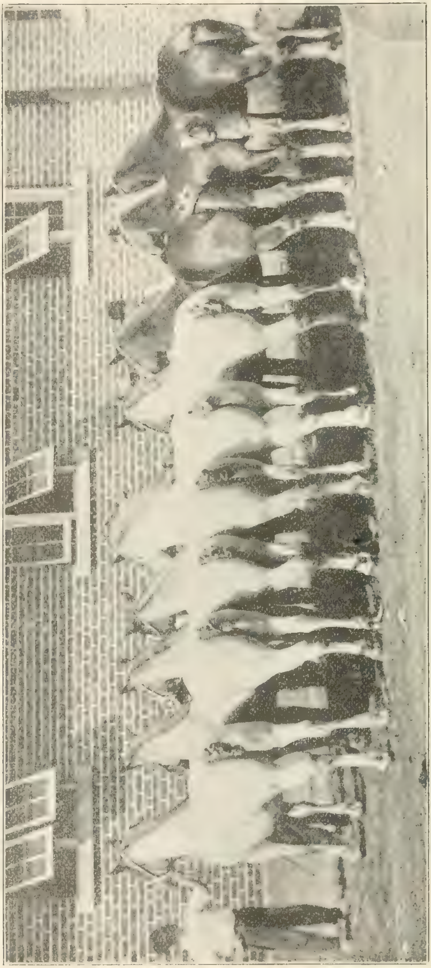
JUDGE............................W. A. DOBSON, Des Moines, Iowa.

AWARDS.

Jack Three Years or Over—First, Wyatt Carr, on Bolivar; second, Illinois Horse Co., on Big Hannibal.

Jack Two Years, Under Three—First, Wyatt Carr, on Mc.; second, George Baker, on Johnson Best.

Champion mule at the 1916 Iowa State Fair, owned and exhibited by Wyatt Carr, Collins, Iowa.



A string of Iowa-bred Belgians shown at the 1916 Iowa State Fair by Wm. Crownover, Hudson, Iowa.

CATTLE—SHORTHORNS.

Superintendent .... H. L. Pike, Whiting.

Judge .... A. J. Ryden, Abingdon, Ill.

EXHIBITORS.

W. C. Anderson, Norwalk; Anoka Farms, Waukesha, Wis.; W. T. Barr, Ames; Carl X. Bixler, Corning; Neal J. Bixler, Corning; G. H. Burge, Mt. Ver-

W. C. Anderson, Norwalk; Anoka Farms, Waukesha, Wis.; W. T. Barr, Ames; Carl X. Bixler, Corning; Neal J. Bixler, Corning; G. H. Burge, Mt. Vernon; Bellows Bros., Maryville, Mo.; Cahill Bros., Rockford; C. E. Churchill, Hartington, Neb.; Carpenter & Carpenter, Baraboo, Wis.; Will A. Carrier, Newton; F. H. Ehlers, Tama; S. G. Eliason, Montivedio, Minn.; G. H. George, Monticello; Otto Gehlback & Sons, Trenton, Mo.; W. E. Graham & Sons, Prairie City; Herr Bros. & Reynolds, Lodi, Wis.; Walter J. Hill, Northcote, Minn.; Wm. Herkelmann, Elwood; Eben E. Jones, Rockland, Wis.; Harold V. Jones, Tabor; Owen Kane, Wisner, Neb.; A. L. Klopping, Underwood; Lakewood Farm, Rock Rapids; McMillen & McMillen, Lodi, Wis.; C. L. McClellan, Lowden; J. W. McDermott, Kahoka, Mo.; Theo. Martin, Bellevue; Jos. Miller & Sons, Granger, Mo.; C. T. Mitchell & Son, Farragut; The Otis Herd, Willoughby, Ohio.; L. C. Oloff, Ireton; J. F. Prather, Williamsville, Ill.; E. M. Parsons & Son, Carroll; Frank L. Pemberton, Iowa Falls; Howell Rees & Sons, Pilger, Neb.; Rapp Bros., St. Edwards, Neb.; Wm. M. Smith & Sons, West Branch; C. A. Saunders, Manilla; Duran H. Summers, Malvern; Frank Toyne & Son, Lanesboro; C. J. Thiess, Rembrant; Tomson Bros., Carbondale, Kan.; Uppermill Farms, Wapello; W. W. Vaughn & Son, Marion; Glen Alvin Windom, Nodaway.

AWARDS.

Bull Three Years or Over—First, J. F. Prather, on Silver Knight, 388261; second, L. C. Oloff, on Marr's Avon, 383858; third, Uppermill Farm, on Sultan's Last, 363468; fourth, Walter J. Hill, on Royal Silver, 387283; fifth, W. W. Vaughn & Son, on Village Ruler, 387931; sixth, S. G. Eliason, on Cornestone, 363116.

Bull Two Years and Under Three—First, Jos. Miller & Sons, on Choice Cumberland, 410399; second, J. F. Prather, on Superior Knight, 408979. third, C. E. Churchill, on Dales Renown, 430239; fourth, Wm. Herkelmann, on Cumberland Standard, 403027; fifth, Walter J. Hill, on Thaxton's Secret 2d, 411372; sixth, Bellows Bros., on Parkdale Baron, 410363.

Bull, Senior Yearling—First, Bellows Bros., on Village Supreme, 423865; second, Howell Rees & Sons, on Violet's Dale, 424602; third, Thomson Bros. on Village Marshal, 427572; fourth, Carpente r& Carpenter, on Sultan Mine 2d, 433457; fifth, Wm. M. Smith & Sons, on Royal Commander, 449189; sixth, S. G. Eliason, on Cumberland's Archer, 432399; seventh, Will Carrier, on Proud Monarch, 422775.

Bull, Junior Yearling—First, W. E. Graham & Son, on Chief Champion, 429096; second, J. F. Prather, on Silver Brown, 440743; third, Owen Kane on Dale's Commander, 485198; fourth, Rapp Bros., on Royal Pride, 446973; fifth, Walter J. Hill, on Type's Model, 429408; sixth, S. G. Eliason, on Silver King, 495201; seventh, W. E. Graham & Son, on Champion White Socks, 499278.

Bull, Senior Calf—First, L. C. Oloff, on Marr's Avon 2d, 480215; second, Uppermill Farm, on Villager's Diamond, 476744; third, Bellows Bros., on Gloster Goods, 473294; fourth, Bellows Bros., on Royal Type 2d, 473300; fifth, Uppermill Farm, on Villager's Coronet, 476743; sixth, Anoka Farms, on Lavender Stamp, 474341.

Bull, Junior Calf—First, Owen Kane, on Faultless Dale, 495606; second, J. W. McDermott, on Cumberland Marshal 2d, 495894; third, Anoka Farms, on Augusta's Sultan 2d, 494950; fourth, Wm. Herklemann, on Cumberland's Goods 2d, 495511; fifth, MacMillan & MacMillan, on Meadow View Knight, 497336; sixth, Jos. Miller & Sons, on Choice Cumberland, Jr., 497340.

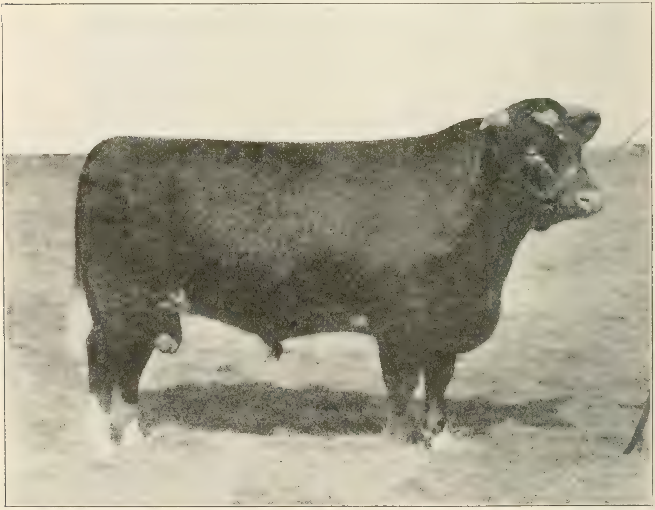
Cow, Three Years or Over—First, Carpenter & Carpenter, on Maxwalton Queen, 127524; second, Wm. Herkelmann, on Lady Devergoil, 108829; third, Eben E. Jones, on Verbena of Oakdale, 149617; fourth, Uppermill Farm, on Lady Craibstone, 73344; fifth, Frank Toyne & Son, on Village Lassie 2d, 127925; sixth, Theo. Martin, on Rose of Autumn 24th, 59051.

Heifer, Two Years and Under Three—First, Howell Rees & Sons, on Lady Violet 7th, 180078; second, Walter J. Hill, on Simplicity 7th, 205855; third, S. G. Eliason, on Dairsie Lass 3d, 176325; fourth, Frank Toyne & Son, on Bonnie Bell, 14th, 180802; fifth, Uppermill Farm, on Village Blythsome 3d, 209232; sixth, J. W. McDermott, on Fair Star, 182700.

Heifer, Senior Yearling—First, Howell Rees & Sons, on Lady Violet 8th, 199786; second, Frank Toyne & Son, on Eastlawn's Lassie, 196426; third, Uppermill Farm, on Village Maid 3d, 199755; fourth, MacMillan & MacMillan, on Imperial Heiress, 203743; fifth, J. W. McDermott, on King's Gift, 203804; sixth, J. F. Prather, on Village Victoria 13th, 211048; seventh, Carpenter & Carpenter, on Collynie's Best, 199377.

Heifer, Junior Yearling—First, Howell Rees & Sons, on Lenora Goods, 466313; second, Uppermill Farm, on Village Clara 6th, 199754; third, Wm. Herkelman, on Village Beauty 3d, 248170; fourth, Rapp Bros., on Sweetheart, 208538; fifth, E. M. Parsons & Son, on Homewood Violet, 240905; sixth, Howell Rees & Sons, on Gay Lady 2d, 203900; seventh, Carpenter & Carpenter, on Collynie Mysie, 472365.

Heifer, Senior Calf—First, Anoka Farms, on Anoka Blossom 2d, 474344; second, Anoka Farms, on Anoka Clipper 3d, 474346; third, J. F. Prather, on Village Blossom 8th, 472916; fourth, Bellows Bros. on Queen of Beauty 33d; fifth, Uppermill Farm, on Villager's Daisy, 476751; sixth, S. G. Eliason, on Lady Clara 9th, 471771.



First prize junior yearling Shorthorn bull, owned and exhibited by Graham and Sons, Prairie City, Iowa.

Heifer, Junior Calf—First, Rapp Bros., on Barmpton Flower, 497331; second, Bellows Bros., on Parkdale Victoria 8th, 495054; third, Howell Rees & Sons, on Cedar Lawn Lady, 497573; fourth, Anoka Farms, on Augusta Anoka 3d, 494954; fifth, Jos. Miller & Sons, on Choice Mayflower, 497342; sixth, Carpenter & Carpenter, on Collynie Mint Drop 2d, 493775.

Champion Bull, Two Years Old or Over—Jos. Miller & Sons, on Choice Cumberland, 410399.

Champion Bull, Under Two Years Old—Bellows Bros., on Village Supreme, 423865.

Champion Cow, Two Years Old or Over—Howell Rees & Sons, on Lady Violet 7th, 180078.

Champion Heifer, Under Two Years Old—Howell Rees & Sons, on Lenora Goods, 466313.

Grand Champion Bull—Bellows Bros., on Village Supreme, 423865 .

Grand Champion Cow or Heifer—Howell Rees & Sons, on Lenora Goods, 466313.

Graded Herd—First, J. F. Prather; second, Jos. Miller & Sons; third, Uppermill Farm; fourth, Howell Rees & Sons; fifth, Walter J. Hill; sixth, Wm. Herkelmann.

Breders' Young Herd—First, Howell Rees & Sons; second, Uppermill Farm; third, S. G. Eliason; fourth, Carpenter & Carpenter; fifth, Tomson Bros.; sixth, Rapp Bros.

Breeders' Calf Herd—First, Anoka Farms; second, Owen Kane; third, Uppermill Farm; fourth, Jos. Miller & Sons; fifth, Bellows Bros.; sixth, Wm. Herkelmann.

Get of Sire—First, Howell Rees & Sons; second, Uppermill Farm; third, Owen Kane; fourth, Anoka Farms; fifth, S. G. Eliason; sixth, Bellows Bros.

Produce Of Cow—First, Howell Rees & Sons; second, Jos. Miller & Sons; third, Carpenter & Carpenter; fourth, Wm. Herkelman; fifth, Theo. Martin; sixth, E. M. Parsons & Sons.

GRAND NATIONAL SHORTHORN BREEDERS' FUTURITY—AMERICAN SHORTHORN BREEDERS' ASSOCIATION.

Bull, Senior Calf—First, L. C. Oloff, on Marr's Avon 2d, 480215; second, Uppermill Farm, on Villager's Diamond, 476744; third, E. A. Hess, on Gloster Goods, 473294; fourth, Bellows Bros., on Royal Type 2d, 473300; fifth, Uppermill Farm, on Villager's Coronet, 476743; sixth Anoka Farms, on Lavender Stamp, 474341; seventh, S. G. Eliason, on Archer's Triumph, 471768; eighth, Anoka Farms, on Good Stamp, 474340; ninth, Uppermill Farm, on Villager's Heir, 476745; tenth, Owen Kane, on Dale's Heir, 471852; eleventh, Jos, Miller & Sons, on Challenger, 482254; twelth, C. L. McClellan, on Village Secret, 476631; thirteenth, Uppermill Farm, on Villager's Star, 476748; fourteenth, Wm. Herkelman, on Cumberland's Royal 2d, 473295; fifteenth, Tomson Bros., on Color Bearer, 476782; sixteenth, McClellan, on Gainford Marshal, 476630; seventeenth, A. L. Klopping, on Rosedale's Goods, 476493; eighteenth, S. G. Eliason, on Secret Star, 471770; nineteenth, Tomson Bros., on Masquerader, 476783; twentieth, Carpenter & Carpenter, on Collynie Cullen.

Bull, Junior Calf—First, Owen Kane, on Faultless Dale, 495606; second, J. W. McDermott, on Cumberland Marshal 2d, 495894, third, Anoka Farms, on Augusta's Sultan 2, 494950; fourth, Wm. Herkelman, on Cumberland's Goods 2d, 495511; fifth, McMillan & McMillan, on Meadow View Knight, 497336; sixth, Jos. Miller & Son, on Choice Cumberland, Jr., 497340; seventh, Rapp Bros., on Pride's Emblem, 497333; eighth, Rapp Bros., on Gloster Pride, 497332; ninth, Anoka Farms, on Kilbean Champion ,494952; tenth Wm. Herkelman, on True King, 495513; eleventh, L. G. Oloff, on Pride of Avon, 496178; twelfth, S. G. Eliason, on Archer's Monarch, 495156; thirteenth, Carpenter & Carpenter, on Collynie Cullen 3d, 493769; fourteenth, Cahill Bros., on Rob Roy Sultan, 496333; fifteenth, L. C. Oloff, on Avon's King, 496175; sixteenth, Eben E. Jones, on Collynie Cumberland, 488836; seventeenth, Uppermill Farm, on Villager's Knight, 476746; eighteenth, Theo. Martin, on Gloster Model, 497344; nineteenth, Theo. Martin, on Gloster Monarch, 497345; twentieth, Wm. Herkelmann, on Cumberland's Pride, 495512.

Heifer, Senior Calf—First, Anoka Farms, on Anoka Blossom 3d, 47134 second, Anoka Farms, on Anoka Broadhocks 3d, 474345; third, J. F. Prather, on Village Blossom 8th, 472916; fourth, Bellows Bros., on Queen of Beauty 33d; fifth, Uppermill Farm, on Villager's Daisy, 476751; sixth, S. G. Eliason, on Lady Clara 9th, 471771; seventh, Tomson Bros., on Victoria 2d, 476785; eighth, Wm. Herkelmann, on Lady Sultan, 473298; ninth, Anoka Farms, on Anoka Clipper 3d, 474346; tenth, C. L. McClellan, on Rosalie, 476633; eleventh, Owen Kane, on Wellington Clipper 3d, 471854; twelfth, G. H. Burge, on Nonpareil Princess, 476139; thirteenth, Eben E. Jones, on Victoria Cumberland, 472900; fourteenth, Carpenter & Carpenter, on Collynie Sultana 2d; fifteenth, Rapp Bros., on Pride's Fancy, 472946; sixteenth, Jos. Miller & Sons, on Cumberland Queen, 472079; seventeenth, S. E. McMillan, on Broadhcoks Lady 228261; eighteenth, S. G. Eliason, on Violet Maid 8th, 471773; nineteenth, C. L. McClellan, on Bonnie Doon, 476632.

Heifer, Junior Calf—First, Rapp Bros., on Barmpton Flower, 497334; second, Bellows Bros., on Parkdale Victoria 8th, 495054; third, Anoka Farms, on Augusta Anoka 3d, 494954; fourth, Jos. Miller & Sons, on Choice Mayflower, 497342; fifth, Carpenter & Carpenter, on Collynie Mintdrop 2d, 493775; sixth, Uppermill Farm, on Villager's Graceful 2d, 476752; seventh, F. H. Ehlers, on Fairview Flora 2d, 496714; eighth, MacMillan & MacMillan, on Meadow View Lily, 497339; ninth, S. G. Eliason, on Miss May 5th, 495157; tenth, L. C. Oloff, on Avon Argess, 496179; eleventh, J. W. McDermott, on Ruberta's Image 2d, 495904; twelfth, J. W. McDermott, on Rosemary Cumberland, 495903; thirteenth, MacMillan & MacMillan, on Meadow View Flower, 97338; fourteenth, Jos. Miller & Sons, on Augusta Cumberland, 497341; fifteenth, Wm. Herkelmann, on Lady Cumberland, 495514; sixteenth, Eben E. Jones, on Collynie Belle, 48837; seventeenth, Theo. Martin, on Lawndale's Rosebud 2d, 497346; eighteenth, Cahill Bros., on Archer's Mildred, 496334; nineteenth, Tomson Bros., on Lady Lavender 2d, 497578; twentieth, Carpenter & Carpenter, on Collynie Broadhooks, 493773.

IOWA SHORTHORN SPECIALS.

Bull Three Years or Over—First, L. C. Oloff, on Marr's Avon, 383858; second, Uppermill Farm, on Sultan's Last, 363468; third, W. W. Vaughn & Son, on Village Ruler, 387931; fourth, Theo. Martin, on Woodlawn Villager, 409698; fifth, G. H. Burge, on Village Stamp, 387463; sixth, C. F. Mitchell & Son, on Double Sultan, 385897.

Bull, Two Years and Under Three—First, Wm. Herkelmann. on Cumberland Standard, 403027; second, Wm. M. Smith & Sons, on Flora's Boy, 408368; third, Frank Toyne & Son, on Eastlawn's Champion, 419060.

Bull, Senior Yearling—First, Wm. M. Smith & Sons, on Royal Commander, 449189; second, Will Carrier, on Proud Monarch, 422775; third, Cahill Bros., on Spicy Sultan, 423997.

Bull, Junior Yearling—First, W. E. Graham & Son, on Chief Champion, 429096; second, W. E. Graham & Son, on Champion White Socks, 499278; third, G. H George, on Selection's Fame, 478826; fourth, G. H. George, on Selection's Knight, 478828; fifth, G. H. George, on Selection's Best, 478824; sixth, W. E Graham & Son, on Young Champion, 427484.

Bull, Senior Calf—First, L. C. Oloff, on Marr's Avon 2d, 480215; second, Uppermill Farm, on Villager's Diamond, 476744; third, Uppermill Farm, on Villager's Coronet, 476743; fourth, Uppermill Farm, on Villager's Heir, 476745; fifth, C. L. McClellan, on Village Secret, 476631; sixth, Uppermill Farm, on Villager's Star, 476748.

Bull, Junior Calf—First, Wm. Herkelmann, on Cumberland's Goods 2d, 495511; second, Wm. Herkelmann, on True King, 495513; third, L. C. Oloff, on Pride of Avon, 496178; fourth, Cahill Bros., on Rob Roy Sultan, 496333; fifth, L. O. Oloff, on Avon's King, 486175; sixth, Uppermill Farm, on Villager's Knight 476746.

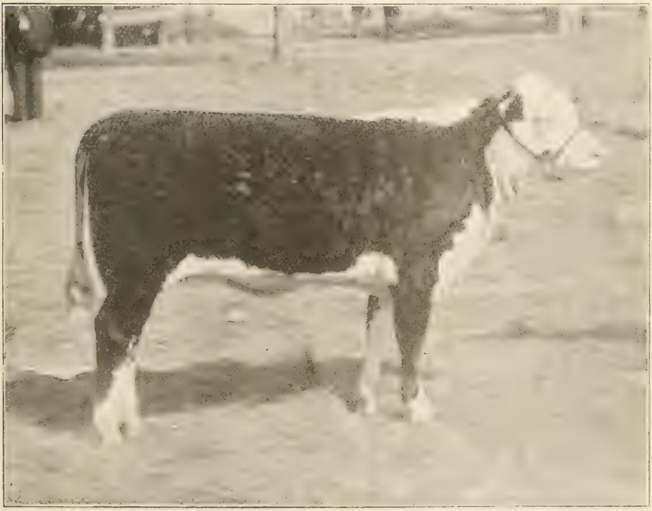
Cow, Three Years or Over—First, Wm. Herkelmann, on Lady Devergoil, 108829; second, Uppermill Farm, on Lady Craibstone, 73344; third, Frank Toyne & Son, on Village Lassie 2d, 127925; fourth, Theo. Martin, on Rose of Autumn 24th, 59051; fifth, L. C. Oloff, on Lady Belle 6th, 226543; sixth, Wm. M. Smith & Son, on Mae Lavender, 179379.

Heifer, Two Years and Under Three—First, Frank Toyne & Son, on Bonnie Belle 14th, 180802; second, Uppermill Farm, on Village Blythsome 3d ,209232; third, F. H. Ehlers, on May Queen, 189620; fourth, William Herkelmann, on Nerissa Pride, 181335; fifth, Wm. M. Smith, on Pro Spartan Sue 4th, 241356; sixth, Cahill Bros., on Nora Man.

Heifer, Senior Yearling—First, Frank Toyne & Son, on Eastlawn's Lassie, 196426; second, Uppermill Farm, on Village Maid 3d, 199755; third, E. M. Parsons & Son, on Princess Perfection, 205954; fourth, E. M. Parsons & Son, on Homewood Duchess, 205947; fifth, F. H. Ehlers, on Flossie, 204493; sixth, Theo. Martin, on Woodlawn Ruby, 197984.

Heifer, Junior Yearling—First, Uppermill Farm, on Village Clara 6th, 199754; second, Wm. Herkelmann, on Village Beauty 3d, 248170; third, E. M. Parsons & Son, on Homewood Violet, 240905; fourth, F. H. Ehlers, on Mabel, 457890; fifth, Frank Toyne & Son, on Lovely Goods 2d, 470506; sixth, Wm. Herkelmann, on Sweet Mildred, 203868.

Heifer, Senior Calf—First, Uppermill Farm, on Villager's Daisy, 476751; second, Wm. Herkelmann, on Lady Sultan, 473298; third, C. L. McClellan, on Rosalie, 476633; fourth, G. H. Burge, on Nonpareil Princess; fifth, Lakewood Farm, on Broadhook's Lady, 228261; sixth, C. L. McClellan, on Bonnie Doon, 476632.



First prize senior heifer calf at Iowa State Fair 1916, bred and exhibited by Cyrus A. Tow, Norway, Iowa.

Heifer, Junior Calf—First, Uppermill Farm, on Villager's Graceful 2d, 476752; second, F. H. Ehlers, on Fairview Flora 2d, 496714; third, L. C. Oloff, on Avon Argess, 496179; fourth, E. M. Parsons & Son, on Violet's Lamiken; fifth, Wm. Herkelmann, on Lady Cumberland, 495514; sixth, Theo. Martin, on Lawndale Rosebud 2d, 497346.

Graded Herd—First, Uppermill Farm; second, Wm. Herkelmann; third, Frank Toyne & Son; fourth, Cahill Bros.

Breeders' Young Herd—First, Uppermill Farm; second, Wm. Herkelmann; third, F. H. Ehlers; fourth, E. M. Parsons & Son; fifth, Cahill Bros.

Breeders' Calf Herd—First, Uppermill Farm; second, Wm. Herkelmann; third, L. O. Oloff; fourth, C. L. McClellan; fifth, Lakewood Farm; sixth, P. H. Ehlers.

Get of Sire—First, Uppermill Farm; second, Wm. Herkelmann; third, F. H. Ehlers; fourth, E. M. Parsons & Son; fifth, G. H. George; sixth, L. C. Oloff.

Produce of Cow—First, Wm. Herkelmann; second, Theo. Martin; third, E. M. Parsons & Son; fourth, E. M. Parsons & Son.

SPECIAL PREMIUMS OFFERED BY THE IOWA SHORTHORN BREEDERS' ASSOCIATION.

Best Senior Bull Calf—L. C. Oloff, on Marr's Avon 2d, 480215.

Best Junior Bull Calf—Wm. Herkelmann on Cumberland's Goods 2d, 495511.

Best Senior Heifer Calf—Uppermill Farm on Villager's Daisy, 476751.

Best Junior Heifer Calf—Uppermill Farm on Villager's Graceful 2d, 476752.

SPECIAL PRIZES OFFERED BY THE AMERICAN SHORTHORN BREEDERS' ASSOCIATION.

For the Best Bull Calf, Calved After September 1, 1915, Bred and Owned by Exhibitor Who Has Not Previously Exhibited Shorthorns at a State Fair—First, G. H. George, on Selection's Gloster, 478827; second, A. L. Klopping, on Cumberland Goods, 476492.

For the Best Heifer Calf Calved After September 1, 1915, Bred and Owned by an Exhibitor Who Has Not Previously Exhibited Shorthorns at a State Fair—First, Frank T. Pemberton, on Valley View Victoria, 502428; second, Frank T. Pemberton, on Countess Marigold, 502427.

HEREFORDS.

JUDGE ....PHIL C. LEE, San Angelo, Tex.

EXHIBITORS.

Wm. Andrews Sons, Morse; E. M. Cassady & Son, Whiting; Jesse Engle & Sons, Sheridan, Mo.; Geo. H. Hazlett, Eldorado, Kan.; O. Harris, Harris, Mo.; R. O. Hazen, What Cheer; Donald Hill, Corning; E. W. Kreischer, Solon; LaVernet Stock Farm, Jackson, Miss.; N. V. Leonard, Waukee; Mayne & Brazie, Harlan; Cyrus A. Tow, Norway; W. L. Yost, Kansas City, Mo.

AWARDS.

Bull Three Years or Over—First, O. Harris, on Gay Lad XVI, 412192; second, Robt. H. Hazlett, on Publican 4th, 429762; third, O. Harris, on Bonnie Brae 60th, 413603; fourth, LaVernet Stock Farm, on Vernet King 4th, 415782; fifth, Mayne & Brazie, on Good Lad, 343996; sixth, E. W. Kreischer, on King Fairfax, 414467; seventh, R. O. Hazen, on Polled Ben, 342526.

Bull Two Years and Under Three—First, Robert H. Hazlett, on Bocaldo 6th, 464826; second, W. L. Yost, on Ardmore, 566000; third, Mayne & Brazie, Good Lad 7th, 465133; fourth, LaVernet Stock Farm, on Vernet Prince 16th, 452150; fifth, Wm. Andrews & Sons, on Bonnie Brae 84th, 451128.

Bull, Senior Yearling—First, W. L. Yost, on Agitator, 566001; second, LaVernet Stock Farm, on Vernet Prince 31st, 494961; third, O. Harris, on Repeater 57th, 486420; fourth, Jesse Engle & Sons, on Beau Blanchard 10th, 565341; fifth, R. O. Hazen, on Polled Ben 8th, 553797.

Bull, Junior Yearling—First, O. Harris, on Gay Lad 40th, 503718; second, O. Harris, on Repeater's Model, 500003; third, Cyrus A. Tow, on Tippecanoe's Promise, 501422; fourth, W. L. Yost, on Patrician 31st, 491686; fifth, LaVernet Stock Farm, on Vernet Prince 36th, 504473; sixth, LaVernet Stock Farm, on Vernet Prince 42d, 504479; seventh, Robt. H. Hazlett, on Beau Baltimore 5th, 493729; eighth, Jesse Engle & Sons, on Beau Blanchard 22 552553.

Bull, Senior Calf—First, Robt. H. Hazlett, on Rialto 2d, 544943; second, O. Harris, on Repeater 83d, 559866; third, W. L. Yost, on Prince Donald, 526154; fourth, LaVernet Stock Farm on Vernet Prince 46th, 548390; fifth, O. Harris, on Repeater 89th, 559872; sixth, Jesse Engle & Sons, on Beau Blanchard 25th, 565350; seventh, O. Harris, on Repeater 36th, 559869; eighth, Wm. Andrews & Sons, on Bonnie Brae 99th, 536774.

Bull, Junior Calf—First, W. L. Yost, on Bonnie Donald, 548949; second, Cyrus A. Tow, on Standard 37th, 562244; third, LaVernet Stock Farm, on Real Comfort, 561939; fourth, Jesse Engle & Sons, on Beau Blanchard 34th, 565358; fifth, Mayne & Brazie, on Good Lad 22d, 558949; sixth, Cyrus A. Tow, on Norway Disturber, 538889; seventh, LaVernet Stock Farm on Vernet Prince 50th, 561942; eighth, E. W. Kreischer, on King's Junior, 551679.

Cow Three Years or Over—First, LaVernet Stock Farm, on Vernet Queen 8th, 415817; second, O. Harris, on Fairview Bonnie 2d, 424257; third, O. Harris, on Miss Gay Lad 15th, 412204; fourth, LaVernet Stock Farm, on Maple Lass 28th, 397616; fifth, Wm. Andrews & Sons, on Bonnibel, 422348; sixth, E. W. Kreischer, on Moonbeam, 348407; seventh, W. L. Yost, on Donna Perfect 9th, 386353.

Heifer Two Years and Under Three—First, LaVernet Stock Farm, on Vernet Princess 23d, 461070; second, W. L. Yost, on Disturber's Lassie 12th, 448703; third, O. Harris, on Miss Repeater 28th, 451579; fourth, R. H. Hazlett, on Zetyna, 450992; fifth, Wm. Andrews & Sons, on Miss Brae 59th, 451136; sixth, Jesse Engle & Sons, on Sunny Sue 2d, 462678; seventh, O. Harris, on Miss Perfection 9th, 451578.

Heifer, Senior Yearling—First, Jesse Engle & Sons, on Belle Blanchard, 511791; second, O. Harris, on Miss Gay Lad 32d, 486401; third, LaVernet Stock Farm, on Vernet Princess 26th, 494965; fourth, W. L. Yost, on Eunice D. Bond, 491678; fifth, Wm. Andrews & Sons, on Miss Brae 71st, 491138; sixth, H. Hazlett, on Zualta, 493299; seventh, W. L. Yost, on Lady Gay Bond, 491679; eighth, Cyrus A. Tow, on Standard's Lady 18th, 492272.

Heifer, Junior Yearling—First, LaVernet Stock Farm, on Vernet Princess 33d, 504480; second, Cyrus A. Tow, on Standard's Lady 23d, 492277; third, R. H. Hazlett, on Toyah, 493296; fourth, Cyrus A. Tow, on Standard's Lady 26th, 492280; fifth, Jesse Engle & Sons, on Belle Blanchard 10th, 565362; sixth, O. Harris, on Miss Gay Lad 37th, 503761; seventh, LaVernet Stock Farm, on Vernet Princess 36th, 504483; eighth, Wm. Andrews & Sons, on Miss Brae 70th, 491137.

Heifer, Senior Calf—First, Cyrus A. Tow, on Disturber's Lass 2d, 538883; second, R. H. Hazlett, on Oleon, 544934; third, O. K. Harris, on Miss Repeater 66th, 559857; fourth, W. L. Yost, on Bonnie Doris, 548959; fifth, Robert H. Hazlett, on Bloss 13th, 544926; sixth, O. Harris, on Miss Repeater 70th, 559861; seventh, LaVernet Stock Farm, on Vernet Princess 42d, 548398; eighth, Jesse Engle & Sons, on Belle Blanchard 25th, 565372.

Heifer, Junior Calf—First, W. L. Yost, on Bonnie Princess, 549194; second, LaVernet Stock Farm, on Vernet Princess 45th, 561945; third, O. Harris, on Miss Repeater 75th, 561600; fourth, R. H. Hazlett, on Yerba Santa, 544948; fifth, Cyrus A. Tow, on Disturber's Lass 3d, 538884; sixth, Jesse Engle & Sons, on Belle Blanchard 26th, 565373; seventh, Robt. H. Hazlett, on Donabel, 544927; eighth, LaVernet Stock Farm ,on Vernet Princess 46th, 561946.

Champion Bull Two Years Old or Over—Robt. H. Hazlett, on Bocaldo 6th, 464826.

Champion Bull Under Two Years Old—O. Harris, on Gay Lad 40th, 503718.

Champion Cow Two Years Old or Over—LaVernet Stock Farm, on Vernet Queen 8th, 415817.

Champion Heifer Under Two Years Old—Jesse Engle & Sons, on Belle Blanchard, 511791.

Grand Champion Bull—Robt. H. Hazlett, on Bocaldo 6th, 464826.

Grand Champion Cow or Heifer—LaVernet Stock Farm, on Vernet Queen 8th, 415817.

Graded Herd—First, LaVernet Stock Farm; second, O. Harris; third, Robt. H. Hazlett; fourth, O. Harris; fifth, W. L. Yost; sixth, LaVernet Stock Farm; seventh, Wm. Andrews & Sons.

Breeders' Young Herd—First, O. Harris; second, Robt. H. Hazlett; third, Jesse Engle & Sons; fourth, LaVernet Stock Farm; fifth, Cyrus A. Tow; sixth, Wm. Andrews & Sons; seventh, E. W. Kreischer.

Breeders' Calf Herd—First, Robt. H. Hazlett; second, W. L. Yost; third, O. Harris; fourth, Cyrus A. Tow; fifth, Jesse Engle & Sons; sixth, LaVernet Stock Farm; seventh, O. Harris.

Get of Sire—First, O. Harris; second, Robt. H. Hazlett; third, W. L. Yost; fourth, Jesse Engle & Sons; fifth, LaVernet Stock Farm; sixth, Cyrus A. Tow; seventh, LaVernet Stock Farm.

Produce of Cow—First, LaVernet Stock Farm; second, R. H. Hazlett; third, Cyrus A. Tow; fourth, R. H. Hazlett; fifth, Jesse Engle & Sons; sixth, LaVernet Stock Farm; seventh, Wm. Andrews & Sons.

IOWA HEREFORD SPECIALS.

Bull Three Years or Over—First, Mayne & Brazie, on Good Lad, 343996; second, E. W. Kreischer, on King Fairfax, 414467; third, R. O. Hazen, on Polled Ben, 342526.

Bull Two Years and Under Three—First, Mayne & Brazie, on Good Lad 7th, 465133; second, Wm. Andrews & Sons, on Bonnie Brae 84th, 451128.

Bull, Senior Yearling—First, R. O. Hazen, on Polled Ben 8th, 553797.

Bull, Junior Yearling—First, Cyrus A. Tow, on Tippecanoe's Promise, 501422; second, Wm. Andrews & Sons, on Bonnie Brae 95th, 536771.

Bull, Senior Calf—First, Wm. Andrews & Sons, on Bonnie Brae 99th, 536774; second, Mayne & Brazie, on Good Lad 17th, 535058; third, Mayne & Brazie, on Good Lad 19th, 548903; fourth, Cyrus A. Tow, on Fairview Generous, 525591; fifth, E. W. Kreischer, on King's Lad 3d, 525264; sixth, Cyrus A. Tow, on Onmore, 538890.

Bull, Junior Calf—First, Cyrus A. Tow, on Standard 37th, 562244; second, Mayne & Brazie, on Good Lad 22d, 558949; third, Cyrus A. Tow, on Norway Disturber, 538889; fourth, E. W. Kreischer, on King's Junior, 551679; fifth, Mayne & Brazie, on Percy Mischief, 558957.

Cow Three Years or Over—First, Wm. Andrews & Sons, on Bonnibel, 422348; second, E. W. Kreischer on Moonbeam, 348407; third, Mayne & Brazie, on Priscilline, 391950.

Heifer Two Years and Under Three—First, Wm. Andrews & Sons, on Miss Brae 59th, 451136; second, E. W. Kreischer, on Miss Standard 1st, 525274; third, Mayne & Brazie, on Good Lady 2d, 440111; fourth, R. O. Hazen, on Miss Ben 2d, 469246; fifth, R. O. Hazen, on Miss Ben 9th, 469252.

Heifer, Senior Yearling—First, Wm. Andrews & Sons, on Miss Brae 71st, 491138; second, Cyrus A. Tow, on Standard's Lady 18th, 492272; third, Cyrus A. Tow, on Standard's Lady 16th, 492270; fourth, Mayne & Brazie, on Good Lady 8th, 495492.

Heifer, Junior Yearling—First, Cyrus A. Tow, on Standard's Lady 23d, 492277; second, Cyrus A. Tow on Standard's Lady 26th, 492280; third, Wm Andrews & Sons, on Miss Brae 70th, 491137; fourth, E. W. Kreischer, on King's Lassie 1st, 525266; fifth, Mayne & Brazie, on Pauline Mischief, 505257; sixth, E. W. Kreischer, on King's Lassie 3d, 525268.

First prize group of Hereford steers, bred and shown by Cyrus A Tow, Norway, Iowa.

Heifer, Senior Calf—First, Cyrus A. Tow, on Disturber's Lass 2d 538883; second, E. W. Kreischer, on King's Lassie 5th, 551683; third, Cyrus A. Tow, on Standard's Lady 28th, 525595; fourth, Mayne & Brazie, on Good Lady 12th, 535061; fifth, Wm. Andrews & Sons, on Miss Brae 78th, 536783; sixth, Wm. Andrews & Sons, on Miss Brae 76th, 536781.

Heifer, Junior Calf—First, Cyrus A. Tow, on Disturber's Lass 3d, 538884; second, Mayne & Brazie, on Good Lady 17th, 558954.

Graded Herd—First, Wm. Andrews & Sons; second, Mayne & Brazie; third, E. W. Kreischer.

Breeders' Young Herd—First, Cyrus A. Tow; second, Wm. Andrews & Sons; third, E. W. Kreischer.

Breeders' Calf Herd—First, Cyrus A. Tow; second, Wm. Andrews & Sons; third, E. W. Kreischer.

Get of Sire—First, Cyrus A. Tow; second, Wm. Andrews; third, E. W. Kreischer; fourth, Mayne & Brazie; fifth, Mayne & Brazie; sixth, R. O. Hazen.

Produce of Cow—First, Cyrus A. Tow; second, Wm. Andrews & Sons; third, Mayne & Brazie; fourth, Mayne & Brazie; fifth, E. W. Kreischer.

ABERDEEN ANGUS.

JUDGE ....J. E. ROBBINS, Horace, Indiana

EXHIBITORS.

Chas. J. Escher & Escher & Ryan, Irwin; Congdon & Battles, North Yakima, Wash.; C. D. & E. F. Caldwell, Burlington Jct., Mo.; Chas. Escher, Jr., Botna; Jno. H. Fitch, Lake City; R. W. Frank, Renwick; L. R. Kershaw, Muskogee, Okla.; T. J. Roberts, Atlantic; H. H. Reed, Marengo; Everett Wright, Mt. Pleasant; Alden G. Wright, Mt. Pleasant.

AWARDS.

Bull Three Years or Over—First, C. D. & E. F. Caldwell, on Blackcap Star, 166702; second, Chas. J. Escher & Escher & Ryan, on Ben Hur, 161156; third, Congdon & Battles, on Barbarian of Rosemere, 173160; fourth, R. W. Frank, on Bromo, 155560; fifth, John H. Fitch, on Burlington W., 166972.

Bull Two Years and Under Three—First, C. D. & E. F. Caldwell, on Blackcap Bertram, 183787; second, Congdon & Battles, on Knight of Rosemere, 185073; third, Chas. J. Escher & Escher & Ryan, on Earl Marshal; fourth, T. J. Roberts, on Bullion of Quietdale, 178813; fifth, Congdon & Battles, on Laddie of Rosemere, 185097; sixth, L. R. Kershaw, on Edgar of Rosemere, 182490; seventh, R. W. Frank, on Edife, 193595.

Bull, Senior Yearling—First, C. D. & E. F. Caldwell, on Blatant, 217605; second, Congdon & Battles, on Prizemere, 199893; third, Congdon & Battles, on Blackright, 195483; fourth, R. W. Frank, on Blackcap of Edenwold, 202597; fifth, H. H. Reed, on Blackburg 2d, 199899; sixth, John H. Fitch, on Kabo F., 194134; seventh, L. R. Kershaw, on Prince Penn, 195669.

Bull, Junior Yearling—First, C. D. & E. F. Caldwell, on Epistos, 201189; second, L. R. Kershaw, on Inverne of Rosemere, 199903; third, Chas. J. Escher & Escher & Ryan, on Pilot of Denison, 198532; fourth, Congdon & Battles, on Ericmere 2d, 199909; fifth, Congdon & Battles, on Cherokeer, 199906; sixth, John H. Fitch, on Berber, 211859.

Bull, Senior Calf—First, T. J. Roberts, on Estori's Type; second, Chas J. Escher & Escher & Ryan, on Enlate, 209477; third, C. D. & E .F. Caldwell, on Eidart, 219854; fourth, T. J. Roberts, on Quo Vadis 5th; fifth, L. R. Kershaw, on Muskogee, 214385; sixth, Chas. J. Escher & Escher & Ryan, on Blackcap Poe, 205921; seventh, Chas. J. Escher & Escher & Ryan, on Black Juix 2d, 219523.

Bull, Junior Calf—First, Congdon & Battles, on Quality Lad, of Rosemere 3d, 217746; second, Chas. J. Escher & Escher & Ryan, on Killum, 214692; third, C. D. & E. F. Caldwell; fourth, Congdon & Battles, on Blackburr of

Rosemere, 217751; fifth, Chas. J. Escher & Escher & Ryan, on Quiet Cap; sixth, H. H. Reed, on Banter R., 219238; seventh, T. J. Roberts, on Erra's Lad.

Cow Three Years or Over—First, C. D. & E. F. Caldwell, on Pride Petite, 141445; second, Congdon & Battles, on Quissy of Meadow Brook, 145235; third, Chas. J. Escher & Escher & Ryan, on Eulinia 28th, 171532; fourth, Chas. J. Escher & Escher & Ryan, on Shady Glen Heather Bloom, 143163; fifth, Chas. J. Escher & Escher & Ryan, on Key of Indianapolis 4th, 150048; sixth, Congdon & Battles, on Pride of Rosemere 5th, 169489; seventh, Chas. J. Escher & Escher & Ryan, on Queen McHenry 58th, 168865.

Heifer Two Years and Under Three—First, Chas. J. Escher & Escher & Ryan, on Bill's Eclipser, 185780; second, Chas. J. Escher & Escher & Ryan, on Elassona Erminia, 185779; third, C. D. & E. F. Caldwell, on Pride of Autumn, 180854; fourth, R. W. Frank, on Pride McHenry 130th; fifth, H. H. Reed, on Glenimere Blackcap 2d, 184615; sixth, Chas. J. Escher & Escher & Ryan & Erica McHenry 39th, 183801; seventh, Congdon & Battles, on Black Lola of Rosemere 3d, 199889.

Heifer, Senior Yearling—First, Chas. J. Escher & Escher & Ryan, on Kensington Lady E., 198294; second, C. D. & E. F. Caldwell, on Blackbird Velvet, 219751; third, J. T. Roberts, on Erica Roberts 10th, 200341; fourth, Chas. J. Escher & Escher & Ryan, on Blackcap McHenry 131st, 198502; fifth, R. W. Frank, on Mayetta L., 206219; sixth, Congdon & Battles, on Blackbird of Rosemere 20th, 199897; seventh, John H. Fitch, on Kassa, 194138.

Heifer, Junior Yearling—First, C. D. & E. F. Caldwell, on Eritus 2d, 201188; second, Chas. J. Escher & Escher & Ryan, on Euso McHenry 52d, 198539; third, Congdon & Battles, on Heather of Rosemere 4th, 199907; fourth, C. D. & E. F. Caldwell, on Esthonia 15th, 219752; sixth, Chas. J. Escher & Escher Pride of Rosemere 9th, 200741; sixth, Chas. Escher & Escher & Ryan, on Kasaba, 212333; seventh, L. R. Kershaw, on Blackbird 185th, 202594.

Heifer, Senior Calf—First, C. D. & E. F. Caldwell, on Erica Eudora, 219753; second, Chas. J. Escher & Escher & Ryan, on Blue Blood Lady 7th, 214680; third, Chas. J. Escher & Escher & Ryan, on Kidlet 3d, 214690; fourth, C. D. & E. F. Caldwell, on Esthonia 15th, 219752; sixth, Chas. J. Escher & Escher & Ryan, on Blackbird Missie 6th, 219521; sixth, Chas. J. Escher & Escher & Ryan, on Blackbird Beth 30th, 219591; seventh, L. R. Kershaw on Muskogee Rose 2d, 219239.

Heifer, Junior Calf—First, Congdon & Battles, on Queen of Rosemere 5th, 217747; second, C. D. & E. F. Caldwell, on Blackcap Echo 3d, 219755; third, Chas. J. Escher & Escher & Ryan, on Queen Wood; fourth, Congdon & Battles, on Freda 4th of Meadow Brook; fifth, Chas. J. Escher & Escher & Ryan, on Evergreen E., 214693; sixth, Chas. J. Escher & Escher & Ryan, on Blackbird Missie 8th; seventh, T. J. Roberts, on Blackbird Roberts 15th.

Champion Bull Two Years Old or Over—C. D. & E. F. Caldwell, on Blackcap Bertram, 183787.

Champion Bull Under Two Years Old—C. D. & E. F. Caldwell, on Epistos, 201189.

Champion Cow Two Years Old or Over—C. D. & E. F. Caldwell, on Pride Petite, 141445.

Champion Heifer Under Two Years Old—Congdon & Battles, on Queen of Rosemere 5th, 217747.

Grand Champion Bull—C. D. & E. F. Caldwell, on Epistos, 201189.

Grand Champion Cow or Heifer—C. D. & E. F. Caldwell, on Pride Petite, 141445.

Graded Herd—First, C. D. & E. F. Caldwell; second Chas. J. Escher & Escher & Ryan; third, Congdon & Battles; fourth, Chas. J. Escher & Escher & Ryan; fifth, R. W. Frank; sixth, H. H. Reed; seventh, John H. Fitch.

Breeders' Young Herd—First, C. D. & E. F. Caldwell; second, Chas. J. Escher & Escher & Ryan; third, Congdon & Battles; fourth, T. J. Roberts; fifth, R. W. Frank; sixth, H. H. Reed.

Breeders' Calf Herd—First, C. D. & E. F. Caldwell; second, Chas. Escher & Escher & Ryan; third, Congdon & Battles; fourth, Chas. J. Escher & Escher & Ryan; fifth, L. A. Kershaw; sixth, A. W. Frank.

Get of Sire—First, C. D. & E. F. Caldwell; second, Chas. J. Escher & Escher & Ryan; third, Congdon & Battles; fourth, Chas. J. Escher & Escher & Ryan; fifth, C. D. & E. F. Caldwell; sixth, Chas. J. Escher & Escher & Ryan; seventh, L. R. Kershaw.

Produce of Cow—First, Chas. J. Escher & Escher & Ryan; second, C. D. & E. F. Caldwell; third, Congdon & Battles; fourth, C. D. & E. F. Caldwell; fifth, T. J. Roberts; sixth, R. W. Frank; seventh, L. R. Kershaw.

GALLOWAY.

JUDGE.............................PROF. W. H. PEW, Ames, Iowa

EXHIBITORS.

A. H. Croft, Bluff City, Kan.; A. & G. Croft, Bluff City, Kan.; O. H. Swigart & Sons, Salisbury, Mo.

AWARDS.

Bull Three Years or Over—First, H. & G. Croft, on Choicemaster, 35185; second, O. H. Swigart & Sons, on Stanley Orthello, 33692.

Bull Two Years Under Three—First, O. H. Swigart & Sons on Myrtle's Stand Patter, 38818; second, A. H. Croft, on A. Carnot, 41008.

Bull, Senior Yearling—First, H. G. Croft, on Mintmaster, 41435; second, O. H. Swigart & Sons, on Pride's Orthello 8th, 42107.

Bull, Junior Yearling—First, O. H. Swigart & Sons, on Belinda's Orthello 2d, 42010; second, H. & G. Croft, on Hannah's Laddie, 40645; third, A. H. Croft, on Worthy Bond, 41438.

Bull, Senior Calf—First, H. & G. Croft ,on Jerome D., 41434; second, O. H. Swigart & Sons, on Lord Graham, 41980; third, A. H. Croft, on Jay of Greenbush, 42090; fourth, O. H. Swigart & Sons, on Stanley's Baron, 42036.

Bull, Junior Calf—First, H. & G. Croft, on Ralph of Greenbush, 42092; second, O. H. Swigart & Sons, on Cleo's Orthello 3d, 42106; third, O. H. Swigart & Sons, on George Washington; fourth, A. H. Croft, on Viceroy, 42093.

Cow Three Years or Over—First, O. H. Swigart & Sons, on Ideal of M. G., 38367; second, O. H. Swigart & Sons, on Nellie Melville, 36223; third, H. & G. Croft, on Daisy Dimple, 35187; fourth, A. H. Croft, on Misty of Wildwood, 36402.

Heifer Two Years Under Three—First, O. H. Swigart & Sons, on Lady Stanley 10th, 42034; second, H. & G. Croft, on Carrie S., 39454; third, A. H. Croft, on Bell of Bluff City, 39585; fourth, O. H. Swigart & Sons, on Orthello's Nell, 40670.

Heifer, Senior Yearling—First, H. & G. Croft, on Lady 2d of Greenbush, 40573; second, O. H. Swigart & Sons, on Orthello's Lillian 2d, 40666; third, A. H. Croft, on Gwendoline 2d, 40571.

Heifer, Senior Calf—First, H. & G. Croft, on Evelyn of Greenbush, 42094; second, O. H. Swigart & Sons, on Evaline 9th of Avondale, 42030; third, A. H. Croft, on Tellmea, 42096.

Heifer, Junior Calf—First, H. & G. Croft, on Luella of Greenbush, 42098; second, O. H. Swigart & Sons, on Lucy 2d of Avondale, 42012; third, A. H. Croft, on Gwendoline 3d, 42097; fourth, O. H. Swigart & Sons, on Kindness 3d of Avondale, 42105.

Champion Bull Two Years Old or Over—O. H. Swigart & Sons, on Myrtle's Stand Patter, 38818.

Champion Bull Under Two Years Old—H. & G. Croft, on Ralph of Greenbush, 42092.

Champion Cow Two Years Old or Over—O. H. Swigart & Son, on Ideal of M. G., 38367.

Champion Heifer Under Two Years Old—H. & G. Croft, on Luella of Greenbush, 42098.

Grand Champion Bull—O. H. Swigart & Sons, on Myrtle's Standpatter, 38818.

Grand Champion Cow or Heifer—O. H. Swigart & Sons, on Ideal of M. G., 38367.

Graded Herd—First, O. H. Swigart & Sons; second, H. & G. Croft; third, O. H. Swigart & Sons; fourth, A. H. Croft.

Breeders' Calf Herd—First, H. & G. Croft; second, A. H. Croft; third, O. H. Swigart & Sons.

Breeders' Young Herd—First, H. & G. Croft; second O. H. Swigart & Sons.

Get of Sire—First, H. & G. Croft; second, O. H. Swigart & Sons; third, A. H. Croft; fourth, O. H. Swigart & Sons.

Produce of Cow—First, H. & G. Croft; second, O. H. Swigart & Sons; third, A. H. Croft; fourth, O. H. Swigart & Sons; fifth, O. H. Swigart & Sons.

POLLED DURHAM.

JUDGE..........................PROF. W. H. PEW, Ames, Iowa.

EXHIBITORS.

Achenbach Bros., Washington, Kan.; Fry & Shaver, Kalona; Albert Hultine, Saronville, Nebr.; Nelson Bros., Dunlap; Frank J. Pemberton, Iowa Falls; A. D. Reeh & Son, Kennard, Nebr.; Ed. Stegelin, Straight Creek, Kan.; S. W. Stewart & Son, Kennard, Nebr.; Walker Bros., Waverly, Nebr.

AWARDS.

Bull Three Years or Over—First, Ed. Stegelin, on True Sultan, 9157; second, S. W. Stewart & Son, on Royal Lavender 2d, 12332; third, Achenbach Bros., on Meadow Sultan, 8721.

Bull Two Years, Under Three—First, Walker Bros., on Charmer, 439910.

Bull, Senior Yearling—First, Ed. Stegelin, on Sultan's Pride, 12298; second, Albert Hultine, on Gloster Count, 12884; third, Walker Bros., on Hero's Dream, 453697.

Bull, Junior Yearling—First, Albert Hultine, on Roselawn Marshal, 12328; second Albert Hultine, on Sultan, Jr., 12346; third, Frank T. Pemberton, on Mary's Red Sultan, 497164; fourth, S. W. Stewart & Son, on King Lavender; fifth, S. W. Stewart & Son, on White Victor.

Bull, Senior Calf—First, Ed. Stegelin, on Sultan's Choice; second, Achenbach Bros., on Intensified Sultan; third, S. W. Stewart & Son, on Winning Lavender; fourth, Albert Hultine, on Royal Goods, 13732; fifth, Fry & Shaver, on Fair Hope, 13757.

Bull, Junior Calf—First, Albert Hultine, on Double Goods, 13733; second, Frank T. Pemberton, on Zina's Sultan, 497165; third, Walker Bros., on Choice Aberdeen; fourth, S. W. Stewart & Son, on Lou's Lavender.

Cow Three Years or Over—First, Achenbach Bros., on Sultana, Vol.6; second, Albert Hultine, on Fern Goods, Vol. 6; third, S. W. Stewart & Son, on Arabella 13th, Vol. 4; fourth, Ed. Stegelin, on Flora, Vol. 6; fifth, Walker Bros., on Red Sue, 115749.

Heifer Two Years, Under Three—First, Ed. Stegelin, on Oakdale Ruth 3d, Vol. 6; second, Achenbach Bros., on Choice Sultana, Vol. 6; third, Albert Hultine, on Winsome, Vol. 6; fourth, Walker Bros., on Our Golden Queen, 176538.

Heifer, Senior Yearling—First, Ed. Stegelin, on Princess Sultana, Vol. 6; second, Achenbach Bros., on Sultana Frances, Vol. 6; third, Ed. Stegelin, on Fancy's Sultana, Vol. 7; fourth, Albert Hultine, on Barmpton Sultana 2d, Vol. 6; fifth, Walker Bros., on Dorothea, 248817.

Heifer, Junior Yearling—First, Albert Hultine, on Siren 2d, Vol. 6; second, Achenbach Bros., on Sultana Minute 2d, Vol. 6; third, Walker Bros., on Artful Lady, 479441.

Heifer, Senior Calf—First, Ed. Stegelin, on Queen's Sultana; second, Albert Hultine, on Gloster Princess 21st, Vol. 7; third, Achenbach Bros., on Sultana Frances 2d; fourth, S. W. Stewart & Son, on The Princess; fifth, S. W. Stewart & Son, on Lady Wallflower.

Heifer, Junior Calf—First, Albert Hultine, on Winsome 2d, Vol. 7; second Ed. Stegelin, on Sultan's Lassie; third, Achenbach Bros., on Sultana Martha; fourth, F. T. Pemberton, on Valley View Queen, 497177; fifth, Achenbach Bros., on Carmine Sultana.

Champion Bull, Two Years Old or Over—Ed. Stegelin, on True Sultan, 9157.

Champion Bull, Under Two Years Old—Albert Hultine, on Roselawn Marshal, 12328.

Champion Cow, Two Years Old or Over—Achenbach Bros., on Sultana, Vol. 6.

Champion Heifer, Under Two Years Old—Ed. Stegelin, on Queen's Sultana.

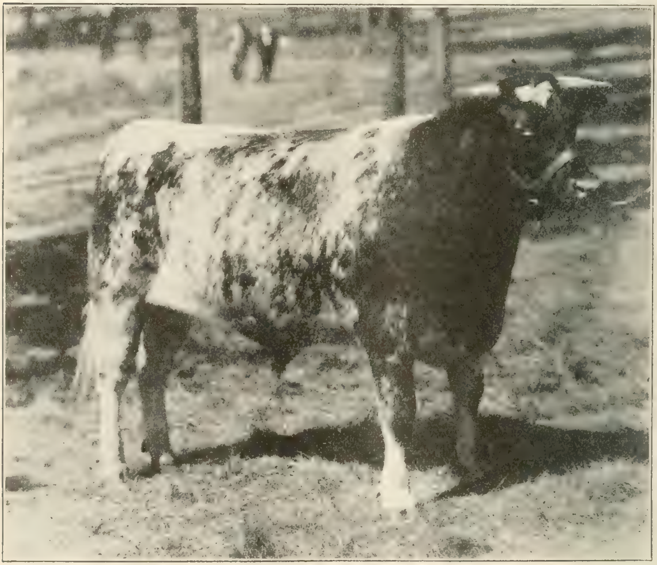
Grand Champion Bull—Ed. Stegelin, on True Sultan, 9157.

Grand Champion Cow or Heifer—Achenbach Bros., on Sultana, Vol. 6.

Graded Herd—First, Ed. Stegelin; second, Achenbach Bros.; third, Walker Bros.

Breeders' Young Herd—First, Ed. Stegelin; second, Albert Hultine; third, Achenbach Bros.; fourth, Walker Bros.

Breeders' Calf Herd—First, Ed. Stegelin; second, Achenbach Bros.; third, Albert Hultine; fourth, S. W. Stewart & Son; fifth, Walker Bros.



Champion grade Shorthorn steer, owned and exhibited at the 1916 Iowa State Fair by Wm. Herkleman, Elmwood, Iowa.

Get of Sire -First, Ed. Stegelin; second, Achenbach Bros.; third, Achenbach Bros.; fourth, Albert Hultine; fifth, S. W. Stewart & Son.

Produce of Cow—First, Ed. Stegelin; second, Albert Hultine; third, Achenbach Bros.; fourth, Walker Bros.; fifth, S. W. Stewart & Son.

RED POLLED.

JUDGE..............................ELLIOTT DAVIS, Lincoln, Nebr.

EXHIBITORS.

J. B. Ahlers, West Bend, Wis.; Haussler Bros., Holbrook, Nebr.; W. S. Hill, Alexandria, S. D.; Geo. Ineichen, Geneva, Ind.; Jean Duluth Farms, Duluth, Minn.; J. W. Larabee, Earlville, Ill.

AWARDS.

Bull Three Years or Over—First, J. W. Larabee, on Teddy's Charmer, 23100; second, Jean Duluth Farm, on Teddy's Best; third, W. S. Hill, on Teddy's Perfection, 24538; fourth, Haussler Bros., on Royal Charmer, 25740.

Bull Two Years, Under Three—First, Geo. Ineichen, on Principal, 27606; second, W. S. Hill, on Curtis, 25465; third, Jean Duluth Farm, on Earl, 25402; fourth, J. W. Larabee, on Prosper, 26123.

Bull, Senior Yearling—First, W. S. Hill, on Leslie, 27023; second, Jean Duluth Farm, on Proctor Knott II, 26607; third, Geo. Ineichen, on Theodore, 27868; fourth, J. B. Ahlers, on Norland, 26742.

Bull, Junior Yearling—First, W. S. Hill, on Monarch, 28920; second, J. W. Larabee, on Billy Charmer, 27865; third, W. S. Hill, on Bernie, 28922; fourth, Jean Duluth Farm, on Proctor Knott IV, 26627; fifth, J. B. Ahlers.

Bull, Senior Calf—First, Haussler Bros., on Teddy's Chief, 29834; second, J. W. Larabee, on Johnny Charmer, 29802; third, J. W. Larabee, on Patsy Charmer, 29803; fourth, Jean Duluth Farm, on Teddy's Panama, 28212; fifth, W. S. Hill, on Raber, 28944.

Bull, Junior Calf—First, J. W. Larabee, on Johnny Charmer, 29807; second, W. S. Hill, on Red Joe, 29904; third, Haussler Bros., on Royal Goods, 29836; fourth, J. B. Ahlers; fifth, Geo. Ineichen, on Carnot Crown, 29712.

Cow Three Years or Over—First, W. S. Hill, on Constant, 26672; second, Jean Duluth Farm, on J. D. Brunhilde, 24865; third, Haussler Bros., on Tippie, 35577; fourth Jean Duluth Farm, on J. D. Lady Watts, 34870; fifth, J. B. Ahlers, on Cora, 34535.

Heifer Two Years, Under Three—First, W. S. Hill, on Caroline, 38601; second, Jean Duluth Farm, on J. D. Purity, 40629; third, Jean Duluth Farm, on Ringlet, 40634; fourth, Geo. Ineichen, on Ella Lee, 41209; fifth, Haussler Bros., on Charming Lady, 39488.

Heifer, Senior Yearling—First, J. W. Larabee, on Louise, 41481; second, W. S. Hill, on Fern, 40532; third, J. W. Larabee, on Lady Charmer, 42297; fourth, J. B. Ahlers, on Maggie, 40092; fifth, Geo. Ineichen, on Pearl Lee, 41212.

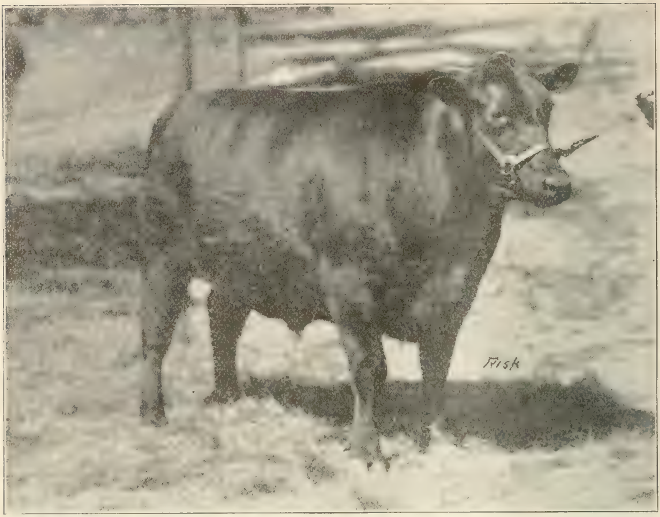
Heifer, Junior Yearling—First, J. W. Larabee, on Miss Charmer, 41482; second, Jean Duluth Farm, on J. D. Winona, 40625; third, J. W. Larabee, on Marie Charmer, 41486; fourth, Geo. Ineichen, on Mary Jay, 41215; fifth, W. S. Hill, on Rue, 42745.

Heifer, Senior Calf—First, J. W. Larabee, on Bessy Charmer, 43707; second, W. S. Hill, on Brownie, 42764; third, Jean Duluth Farm, on Teddy's Dorothy, 42189; fourth, W. S. Hill, on Penelope, 42754; fifth, Haussler Bros., on U. Ruby, 43743.

Heifer, Junior Calf—First, W. S. Hill, on Clover; second, Haussler Bros., on U. Pride, 43746; third, Jean Duluth Farm, on J. D. Bomby, 43517; fourth, J. W. Larabee, on Tidy, 43710; fifth, J. B. Ahlers.

Champion Bull, Two Years Old or Over—J. W. Larabee, on Teddy's Charmer, 23100.

Champion Bull, Under Two Years—W. S. Hill, on Monarch, 28920.



Champion grade Angus steer at the 1916 Iowa State Fair, owned and exhibited by Escher and Ryan, Botna, Iowa.

Champion Cow, Two Years Old or Over—W. S. Hill, on Caroline, 38601.

Champion Heifer, Under Two Years Old—J. W. Larabee, on Louise, 41481.

Grand Champion Bull—J. W. Larabee, on Teddy's Charmer, 23100.

Grand Champion Cow or Heifer—W. S. Hill, on Caroline, 38601.

Graded Herd—First, W. S. Hill; second, J. W. Larabee; third, Jean Duluth Farm; fourth, Haussler Bros.; fifth, Geo. Ineichen.

Breeders' Young Herd—First, J. W. Larabee—second, W. S. Hill; third, Jean Duluth Farm; fourth, Geo. Ineichen; fifth, Haussler Bros.

Breeders' Calf Herd—First, Haussler Bros.; second, W. S. Hill; third, J. W. Larabee; fourth, Jean Duluth Farm; fifth, J. B. Ahlers.

Get of Sire—First, J. W. Larabee; second, W. S. Hill; third, J. W. Larabee; fourth, W. S. Hill—fifth, Haussler Bros.

Produce of Cow—First, W. S. Hill; second, J. W. Larabee; third, J. W. Larabee; fourth, J. W. Larabee; fifth, Geo. Ineichen.

SPECIAL PRIZES OFFERED BY THE RED POLLED CATTLE CLUB OF AMERICA.

Bull Three Years or Over—First, J. W. Larabee, on Teddy's Charmer, 23100; second, Jean Duluth Farm, on Teddy's Best; third, W. S. Hill, on Teddy's Perfection, 24538; fourth, Haussler Bros., on Royal Charmer, 25740.

Bull Two Years, Under Three—First, George Ineichen, on Principal 27606; second, W. S. Hill, on Curtis, 25465; third, Jean Duluth Farm, on Earl 25402; fourth, J. W. Larabee, on Prosper, 26123.

Bull, Senior Yearling—First, W. S. Hill, Leslie, 27023; second, Jean Duluth Farm, on Proctor Knott II, 26607; third, George Ineichen, on Theodore, 27868; fourth, J. B. Ahlers, on Norland, 26742.

Bull, Junior Yearling—First, W. S. Hill, on Monarch, 28920; second, J. W. Larabee, on Billy Charmer, 27865; third, W. S. Hill, on Bernie 28922; fourth, Jean Duluth Farm, on Proctor Knott IV, 26627; fifth, J. B. Ahlers.

Bull, Senior Calf—First, Haussler Bros., on Teddy's Chief, 29834; second, J. W. Larabee, on Johnny Charmer, 29802; third, J. W. Larabee, on Patsy Charmer, 29803; fourth, Jean Duluth Farm, on Teddy's Panama, 28212; fifth, W. S. Hill, on Raber, 28914.

Bull, Junior Calf—First, J. W. Larabee, on Johnny Charmer, 29809; second, W. S. Hill, on Red Joe, 29904; third, Haussler Bros., on Royal Goods, 29836; fourth, J. B. Ahlers; fifth, George Ineichen, on Carnot Crown, 29712.

Cow Three Years or Over—First, W. S. Hill, on Constant, 26672; second, Jean Duluth Farm, on J. D. Brunhilda, 24865; third, Haussler Bros., on Tippie, 35577; fourth, Jean Duluth Farm, on J. D. Lady Watts, 34870; fifth, J. B. Ahlers, on Cora 34535.

Heifer Two Years, Under Three—First, W. S. Hill, on Caroline, 38601; second, Jean Duluth Farm, on J. D. Purity, 40629; third, Jean Duluth Farm, on Ringlet, 40634; fourth, George Ineichen ,on Ella Lee, 41209; fifth, Haussler Bros., on Charming Lady, 39488.

Heifer, Senior Yearling—First, J. W. Larabee, on Louise, 41481; second, W. S. Hill, on Fern, 40532; third, J. W. Larabee, on Lady Charmer, 42297; fourth, J. B. Ahlers, on Maggie, 40092; fifth, George Ineichen, on Pearl Lee, 41212.

Heifer, Junior Yearling—First, J. W. Larabee, on Miss Charmer, 41482; second, Jean Duluth Farm, on J. D. Winona, 40625; third, J. W. Larabee, on Marie Charmer, 41486; fourth, George Ineichen, on Mary Jay, 41215; fifth, W. S. Hill, on Rue, 42745.

Heifer, Senior Calf—First, J. W. Larabee, on Bessy Charmer, 43707; second, W. S. Hill, on Brownie, 42764; third, Jean Duluth Farm, on Teddy's Dorothy, 42189; fourth, W. S. Hill, on Penelope, 42754; fifth, Haussler Bros., on U. Ruby, 43743.

Heifer, Junior Calf—First, W. S. Hill, on Clover; second, Haussler Bros., on U. Pride, 43746; third, Jean Duluth Farm, on J. D. Bomby, 43517; fourth, J. W. Larabee, on Tidy, 43710; fifth, J. B. Ahlers.

HOLSTEINS.

JUDGE........................DR. O. P. THOMPSON, Waterloo, Iowa.

EXHIBITORS.

Baird Bros., Waukesha, Wis.; Perry S. Brunk, Altoona, Ia.; J. M. Chestnut & Sons, Denison, Kan.; N. G. Davidson, Algona, Ia.; Courtney Davis, Berwick, Ia.; Galloway & Messer Farm, Waterloo, Ia.; R. E. Haeger, Algonquin, Ill.; Henderson & Erickson, Randall; Iowana Farms, Davenport; J. V. Lingenfelter, Altoona; Bert McCorkle & Son, Algona, Ia.; J. F. McFadden, Algona; Paul Peters, Ankeny; United States Indian School, Genoa, Nebr.; Chas. VanderSchaaf, Sparta, Wis.

AWARDS.

Bull Three Years or Over—First, Galloway-Messer Farms, on Hengerveld King, 73774; second, R. E. Haeger, on Paul Calamo Korndyke, 49342; third, R. E. Haeger, on Paul Calamo Korndyke 14th, 113880; fourth, Baird Bros., on Bairdland Segis Sir Prize, 71175.

Bull Two Years, Under Three—First, Galloway-Messer Farms, on King Segis Johanna Ormsby, 163801; second, J. M. Chestnut & Sons, on Johanna Bonheur Champion 2d, 143420; third, R. E. Haeger, on Joe Calamo Hengerveldo, 138159; fourth, Iowana Farms, on Iowana De Cola Fayne, 129809; fifth, Iowana Farms, on Colantha Dutchland Snowdrop, 127646.

Bull One Year, Under Two—First, Iowana Farms, on Iowana Mercedes Homestead, 140345; second, United States Indian School, on King Burke Pontiac Segis, 174248; third, Galloway-Messer Farms, on King Segis Pontiac Combination 5th, 171791; fourth, R. E. Haeger, on King Segis Pontiac 22d, 170361; fifth, Galloway-Messer Farms, on Skylark Colantha, 163651.

Bull, Senior Calf—First, David Roberts, on Roberts Abbekirk Pontiac, 169976; second, Iowana Farms, on Iowana Burke Fayne, 179563; third, Galloway-Messer Farms, on King Segis Johanna Ormsby 2d, 171610; fourth, Galloway-Messer Farms, on Korndyke Pontiac Ormsby, 171611; fifth, Baird Bros., on Farsee Sir Segis Hengerveld.

Bull, Junior Calf—First, Galloway-Messer Farms, on Skylark Pontiac Bettina; second, R. E. Haeger, on King Segis Pontiac Isaac; third, Baird Bros., on Nockdair Segis Fobes Boy, 187020; fourth, Baird Bros., on Nockdair Segis George, 187019; fifth, Iowana Farms, on Sir Canary Gewina Fayne, 181552.

Cow Four Years or Over—First, R. E. Haeger, on Beulah Shepard Empress, 181271; second, R. E. Haeger, on Princess Hengerveld 4th, 195581; third, R. E. Haeger, on Minerva Beets, 85791; fourth, Galloway-Messer Farms, on Fay Jewel Beauty, 59866; fifth, Galloway-Messer Farms, on Marie Hengerveld De Kol, 105649.

Cow Three Years, Under Four—First, Galloway-Messer Farms, on Jewel Walker Gerben of Cedarside, 214099; second, R. E. Haeger; third, United States Indian School, on Lady Abbekerk Golden 2d, 211725; fourth, Baird Bros., on Nockdair Segis Prairie Flower, 208179.

Heifer Two Years, Under Three—First, R. E. Haeger, on Aconeth Lady Hengerveld, 247799; second, Galloway-Messer Farms, on Buffalo Portia Dolde, 216068; third Baird Bros., on Nockdair Segis Netherland Prize, 232984; fourth, Chas. VanderSchaaf, on Queen of Enterprise Stock Farm, 233556; fifth, R. E. Haeger, on K. S. P. Spofford Beets.

Heifer, Senior Yearling—First, Iowana Farms, on Iowana Paulline, 251379; second, Galloway-Messer Farms, on Nellie Segis Pontiac, 281918; third, Iowana Farms, on Iowana De Kol Star, 262066; fourth, R. E. Haeger, on K. S. P. Lillian Beets; fifth, Galloway-Messer Farms, on Lady Winters Segis, 289967.

Heifer, Junior Yearling—First, Iowana Farms, on Iowana Fayne Julia, 274053; second, Iowana Farms, on Princess De Cola Dollie, 283188; third, R. E. Haeger, on Nancy Calamo Korndyke; fourth, Baird Bros., on Nockdair Segis Valentine, 311781; fifth, Baird Bros., on Nockdair Segis Korndyke Lottie, 311782.

Heifer, Senior Calf—First, J. M. Chestnut & Sons, on Wayne Bonheur De Kol, 304069; second, Iowana Farms, on Johanna Fayne Claribel, 323224; third, Baird Bros., on Nockdair Segis Longfield Gem, 316133; fourth, Galloway-Messer Farms, on Jewel Walker Segis Pontiac, 305494; fifth, Baird Bros., on Nockdair Segis Goldbron, 316131.

Heifer, Junior Calf—First, Galloway-Messer Farms, on Eudora Segis Pontiac; second, Iowana Farms, on Jessie Oak Fobes Mooie, 232328; third, Iowana Farms, on Leah Watson Fobes Mooie, 323229; fourth, R. E. Haeger, on Tantalus Calamo Korndyke; fifth, Baird Bros., on Nockair Segis Gelsche, 332816.

Champion Bull, Two Years Old or Over—Galloway-Messer Farms, on King Segis Johanna Ormsby, 163801.

Champion Bull, Under Two Years Old—Dr. David Roberts, on Roberts Abbekirk Pontiac, 169976.

Champion Cow, Two Years Old or Over—Galloway-Messer Farms, on Jewel Walker Gerben of Cedarside, 214099.

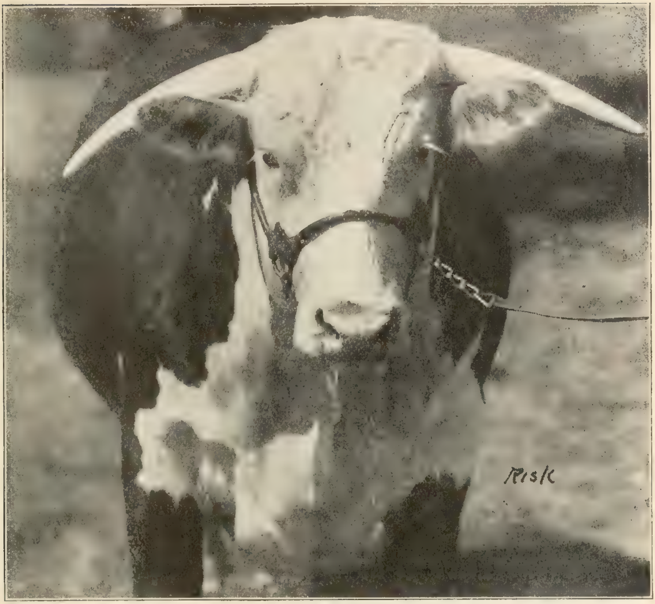
Champion Heifer, Under Two Years Old—Iowana Farms, on Iowana Pauline 251379.

Grand Champion Bull—Galloway-Messer Farms, on King Segis Johanna Ormsby, 163801.

Grand Champion Cow or Heifer—Galloway-Messer, on Jewel Walker Gerben of Cedarside, 214099.

Graded Herd—First, Galloway-Messer Farms; second, R. E. Haeger; third, R. E. Haeger; fourth, United States Indian School; fifth, Chas VanderSchaaf.

Breeders' Young Herd—First, Iowana Farms; second, Galloway-Messer; third, R. E. Haeger; fourth, Baird Bros.; fifth, United States Indian School.



First prize two-year-old Hereford steer, exhibited at the 1916 Iowa State Fair by Cyrus A. Tow, Norway.

Breeders' Calf Herd—First, Iowana Farms; second, Galloway-Messer Farms; third, R. E. Haeger; fourth, Baird Bros.; fifth, J. M. Chestnut & Sons.

Get of Sire—First, Galloway-Messer Farms; second, Iowana Farms; third, R. E. Haeger; fourth, Galloway-Messer Farms; fifth, Baird Bros.

Produce of Cow—First, Iowana Farms; second, Galloway-Messer Farms; third, R. E. Haeger; fourth, J. M. Chestnut & Sons; fifth, Bert McCorkle & Son.

Premier Exhibitor—Galloway-Messer Farms.

Premier Breeder—Iowana Farms.

JERSEYS.

JUDGE.................................WILL FORBES, Waterloo, Iowa.

EXHIBITORS.

R. S. Butler, Des Moines; Nelle Fabyan, Geneva, Ill.; F. D. Underwood, Wauwatosa, Wis.; H. C. Young, Lincoln, Nebr.

AWARDS.

Bull Three Years or Over—First, H. C. Young, on Stockwell's Champion, 115854; second, F. D. Underwood, on Noble's Fawn Prince, 95705.

Bull Two Years, Under Three—First, Nelle Fabyan, on Fern's Noble of Riverbank, 132480; second, Nelle Fabyan, on Golden Noble of Riverbank, 132481; third, Nelle Fabyan, on Riverbank's Oxford Noble.

Bull One Year, Under Two—First, Nelle Fabyan, on Combination's Premier, Jr., 134721; second, Nelle Fabyan, on Blue Mundi, 134262; third, F. D. Underwood, on Frederick's Knight, 134402; fourth, H. C. Young, on Josephine's Jamont of St. L., 134266.

Bull, Senior Calf—First, Nelle Fabyan, on Ocean Blue's Chieftain; second, F. D. Underwood, on Frederick's Jim Conners, 137422; third, Nelle Fabyan, on Zella Rose's Goden Fern; fourth, Nelle Fabyan, on Britannia's Dots Fern; fifth, H. C. Young, on Eminent Duke's Raleigh.

Bull, Junior Calf—First, Nelle Fabyan, on Ville Fern; second, H. C. Young, on Coomassie's Prince of W., 140749; third, H. C. Young, on Dukes of W's Gay Lad; fourth, H. D. Underwood, on Frederick's Lord of Fewacres, 140034.

Cow Four Years or Over—First, Nelle Fabyan, on Manor's Blossom, 17488; second, H. C. Young, on Jamont's Beauty Girl, 248600; third, H. C. Young, on Torono's Iris, 275101; fourth, Nelle Fabyan, on Rozel's Fairy's Queen, 18654; fifth, F. D. Underwood, on Distinction's Oxford Belle, 255626.

Cow Three Years, Under Four—First, H. C. Young, on Raleigh's Little Torment, 315987; second, F. D. Underwood, on Belvidere's Fairy, 318512.

Heifer Two Years, Under Three— First, H. C. Young, on Raleigh's Missy G., 315993; second, H. C. Young, on Duke's Marie W., 315997; third, F. D. Underwood, on Iceland's Lady Eleanor, 319655; fourth, F. D. Underwood, on Noble's Lady Helene, 319654; fifth, Nelle Fabyan, on Sultana of Riverbank, 334474.

Heifer, Senior Yearling—First, F. D. Underwood, on Lady Bashua, 323792; second, H. C. Young, on Raleigh's Betty Y. of W.; third, H. C. Young, on Duke's Beauty Girl of W., 338073; fourth, F. D. Underwood, on Lady Dunlap, 326894.

Heifer, Junior Yearling—First, H. C. Young, on Raleigh's Cream Pot; second, H. C. Young, on Marie's Sweet Lass of W., 334042; third, H. C. Young, on Raleigh's Beauty Girl of W., 338077.

Heifer, Senior Calf—First, Nelle Fabyan, on Ocean Blue's Cowslip; second, F. D. Underwood, on Frederick's Lady Margaret, 345810; third, H. C. Young, on Raleigh's Beauty Queen; fourth, H. C. Young, on Raleigh's Etta Pogis; fifth, Nelle Fayban, on Ocean Blue's Lilac.

Heifer, Junior Calf—First, F. D. Underwood, on Frederick's Lady Marjorie; second, H. C. Young, on Rosette Y's Queen; third, Nelle Fabyan, on Golden Duchess; fourth, R. S. Butler, on Majesty Oxford Combination Buttercup; fifth, H. C. Young, on Raleigh's Belle of W.

Champion Bull, Two Years or Over—H. C. Young, on Stockwell's Champion, 115854.

Champion Bull, Under Two Years Old—Nelle Fabyan, on Combination's Premier, Jr., 134721.

Champion Cow, Two Years Old or Over—Nelle Fabyan, on Manor's Blossom, 17488.

Champion Heifer, Under Two Years Old—F. D. Underwood, on Lady Bashua, 323792.

Grand Champion Bull—H. C. Young, on Stockwell's Champion, 115854.

Grand Champion Cow or Heifer—Nelle Fabyan, on Manor's Blossom, 17488.

Graded Herd—First, H. C. Young; second, F. D. Underwood; third, H. C Young.

Breeders' Young Herd—First, H. C. Young; second, H. C. Young.

Breeders' Calf Herd—First, H. C. Young; second, H. C. Young.

Get of Sire—First, F. D. Underwood; second, Nelle Fabyan; third, H. C Young; fourth, Nelle Fabyan; fifth, H. C. Young.

Produce of Cow—First, Nelle Fabyan; second, Nelle Fabyan; third, H. C. Young; fourth, F. D. Underwood.

Premier Exhibitor—H. C. Young.

Premier Breeder—H. C. Young.

First prize group of Shorthorn steers at Iowa State Fair. Owned and Exhibited by Wm. Herkleman, Elmwood, Iowa.

GUERNSEYS.

JUDGE.......................PROF. H. G. VAN PELT, Waterloo, Iowa.

EXHIBITORS.

G. G. Hartley, Floodwood, Minn.; Jean Duluth Farms, Duluth, Minn.; W. W. Marsh, Waterloo, Ia.; Wilcox & Stubbs, Des Moines, Ia.; Nelle Fabyan, Geneva, Ill.

AWARDS.

Bull Three Years or Over—First, W. W. Marsh, on Hayes' Cherub II, 25147; second, G. G. Hartley, on Gold Lassies' Julian, 27704; third, Wilcox & Stubbs, on Imp. Patritia's Son, 24202; fourth Wilcox & Stubbs, on Penyn of Rosendale, 11282.

Bull Two Years, Under Three—First, W. W. Marsh, on Cherry's Momento of Iowa, 27562; second, Jean Duluth Farms, on Starlight's Excelsior of J. D., 30157.

Bull One Year, Under Two—First, Jean Duluth Farm, on May Rose Yeksa Starlight, 33918; second, Wilcox & Stubbs, on Glenrock Quito, 33763; third, Wilcox & Stubbs, on Francis Holdon of Fairview, 34795.

Bull, Senior Calf—First, W. W. Marsh, on Flora's Memento, 34780; second, Jean Duluth Farms, on Marathon Rose King, 37037; third, Wilcox & Stubbs; fourth, Wilcox & Stubbs; fifth, W. W. Marsh, on Beauty Mar, 36205.

Bull, Junior Calf—First, Wilcox & Stubbs; second, Jean Duluth Farms, on May Rose Noble of J. D., 38183; third, W. W. Marsh, on Millie's Lord Mar 38182.

Cow Four Years or Over—First, W. W. Marsh, on Hayes' Wena IV, 9009; second, Nelle Fabyan, on Polly of Hillstead, 31557; third, W. W. Marsh, on Rose des Houards 52d, 528701; fourth, Wilcox & Stubbs, on Frances Rose if Fairview, 30950; fifth, G. G. Hartley, on La Voce of Riverside Farm, 36284.

Cow Three Years, Under Four—First, W. W. Marsh, on Hayes' Snowdrop 6th, 9496; second, W. W. Marsh, on Hayes' Express 9th, 10073; third, Jean Duluth Farm Inc., on J. D. Phyliss, 45611.

Heifer Two Years, Under Three—First, Jean Duluth Farm, on J. D. Coronet, 52816; second, W. W. Marsh, on Hayes' Mabel, 10080; third, Wilcox & Stubbs, on Pride of Villageview Farm, 49562; fourth, Wilcox & Stubbs, on Bob Rilma's Daisy Bell, 50868.

Heifer, Senior Yearling—First, Jean Duluth Farm, on William's May Rose, 56836; second, W. W. Marsh, on Belle of Prairie, 55752; third, W. W. Marsh, on Cherub's Rose of the Prairie, 54718; fourth, G. G. Hartley, on Island Farm's Home Lassie, 53707; fifth, Wilcox & Stubbs, on Hollens Lady 4th, 61601.

Heifer, Junior Yearling—First, W. W. Marsh, on Cherub's Deanie of the Prairie, 59742; second, W. W. Marsh, on Cardun of the Prairie, 59417; third, Jean Duluth Farm, on Lyzette's May Rose, 57497; fourth, Wilcox & Stubbs, on Belle Black Spot, 60746; fifth, G. G. Hartley, on Golden Chene Starlight, 59143.

Heifer, Senior Calf—First, Jean Duluth Farm, on Gress' May Rose; second, W. W. Marsh, on Cherub's Lily La Pine, 63439; third, W. W. Marsh, on Memento's Snowdrop, 63440; fourth, W. W. Marsh, on Memento's Lady of the Prairie, 59419; fifth, W. W. Marsh, on Cherub's Fleurie Mar, 63441.

Heifer, Junior Calf—First, W. W. Marsh, on Hayes' Golden Cherry 15th; second, W. W. Marsh, on Hayes' Moss Rose; third, Wilcox & Stubbs, on Margaret Relma; fourth, W. W. Marsh, on Hayes' Golden Cherry, 16th; fifth, Jean Duluth Farms, on J. D. Roselight, 64354.

Champion Bull, Two Years Old or Over—W. W. Marsh, on Hayes' Cherub II, 25147.

Champion Bull, Under Two Years Old—W. W. Marsh, on Flora's Memento, 34780.

Champion Cow, Two Years Old or Over—W. W. Marsh, on Hayes' Wena IV, 9009.

Champion Heifer, Under Two Years Old Jean Duluth Farm, on Grees' May Rose.

Grand Champion Bull W. W. Marsh, on Hayes' Cherub II, 25147.

Grand Champion Cow or Heifer—W. W. Marsh, on Hayes' Wena IV, 9009.

Graded Herd—First, W. W. Marsh; second, Jean Duluth Farm; third, Wilcox & Stubbs; fourth, Wilcox & Stubbs.

Breeders' Young Herd—First, Jean Duluth Farm; second, W. W. Marsh; third, Wilcox & Stubbs; fourth, G. G. Hartley.

Breeders' Calf Herd—First, W. W. Marsh; second, Jean Duluth Farm; third, Wilcox & Stubbs.

Get of Sire—First, W. W. Marsh; second, Jean Duluth Farms; third, Jean Duluth Farms; fourth, G. G. Hartley; fifth, Wilcox & Stubbs.

Produce of Cow—First, W. W. Marsh; second, Wilcox & Stubbs; third, Jean Duluth Farms; fourth, G. G. Hartley; fifth, G. G. Hartley.

Premier Exhibitor—W. W. Marsh.

Premier Breeder—Jean Duluth Farm.

AYRSHIRES.

JUDGE............................JAMES WATSON, Kansas City, Mo.

EXHIBITORS.

Ferndell Farms, Ladysmith, Wis.; Wm. Galloway, Waterloo; Dr. David Roberts, Waukesha, Wis.; Adam Seitz, Waukesha, Wis.

AWARDS.

Bull Three Years or Over—First, Adam Seitz, on Bargenrock Rising Star, 14843; second, Wm. Galloway, on Auchenbrain Good Gift, 15487; third, Dr. David Roberts, on Roberts' Cavalier, 14651; fourth, Ferndell Farms, on Victor of Ladysmith, 14779.

Bull Two Years, Under Three—First, Adam Seitz, on Cavalier's Kilnford Ringmaster, 16816; second, Dr. David Roberts, on Roberts' Fairy Duke, 17843; third, Ferndell Farms, on Ferndell Victor, 16369; fourth Wm. Galloway, on Willowmoor Peter Pan 26th, 16048.

Bull One Year, Under Two—First, Adam Seitz, on Cavalier's Lord Rosberg, 17956; second, Wm. Galloway, on Cavalier's Merry Lad, 17957; third, Dr. David Roberts, on Roberts of Hamline, 17994; fourth, Ferndell Farms, on Ferndell's Lessnessock Gem, 17380; fifth, Dr. David Roberts, on Roberts of Waukesha, 17841.

Bull, Senior Calf—First, Dr. David Roberts, on Roberts' Pride Cavalier, 18834; second, Adam Seitz, on Cavalier's Lord Stuart; third Ferndell Farms, on Ferndell's Credit, 18836; fourth, Wm. Galloway, on Dalpeddeer Good Gift, 18265; fifth, Ferndell Farms, on Ferndell's Trust, 18837.

Bull, Junior Calf—First, Adam Seitz, on Cavalier's Kilnford Gloster; second, Ferndell Farms, on Ferndell's Loyalty, 18839; third, Ferndell Farms, on Ferndell's Arrogance, 18838; fourth, Dr. David Roberts, on Roberts of Dousman; fifth, Adam Seitz, on Cavalier's Kilnford Marquis.

Cow Four Years or Over—First, Adam Seitz, on Imp. Kilnford Bell 4th, 32797; second, Ferndell Farms, on May of Hillcroft, 25056; third, Dr. David Roberts, on Value's Pride of Oak Valley, 28097; fourth, Ferndell Farms, on Silver Beauty of Bulrush Farm, 25717; fifth, Adam Seitz, on Imp. Hillhouse Maud, 32799.

Cow Three Lears, Under Four—First, Adam Seitz, on Bargenrock Carnation, 32943; second, Dr. David Roberts, on Belle Roberta, 34782; third, Adam Seitz, on Lady Margaret; fourth, Wm. Galloway, on Princess, 40618; fifth, Adam Seitz, on Cavalier's Wild Rose, 35693.

Heifer Two Years, Under Three—First, Ferndell Farms, on Silver Pet of Ferndell, 39735; fifth, Adam Seitz, on Cavalier's Rose Wood

Adam Seitz, on Cavalier's Pet, 42559; fourth, Adam Seitz, on Cavalier's Dairy Maid, 42557; fifth, Wm. Galloway, on Lessnessock Carlton, 40624.

Heifer, Senior Yearling—First, Wm. Galloway, on Nona Good Gift, 39923; second, David Roberts, on Roberta Value's Pride Cavalier, 39173 third, Adam Seitz ,on Cavalier's Lark Spur; fourth, Ferndell Farms, on Snow Flake of Ferndell, 39735; fifth, Adam Seietz, on Cavalier's Rose Wood.

Heifer, Junior Yearling—First, Ferndell Farms, on Ferndell's Felicity, 43286; second Wm. Galloway, on Rose Good Gift, 41533; third, Adam Seitz, on Cavalier's Rose Leaf; fourth, David Roberts, on Roberta Cavalier's Belle, 40309; fifth, Ferndell Farms, on Ferndell's Innocence, 43287.

Heifer, Senior Calf—First, Adam Seitz, on Cavalier's Lavender; second, Wm. Galloway, on Good Gift's Nona, 41534; third, Wm. Galloway, on Sylvia Good Gift, 43327; fourth, Adam Seitz, on Cavalier's Kilnford Twinkle, fifth, Dr. David Roberts, on Roberta Southwick Cavalier, 43282.

Heifer, Junior Calf—First, Adam Seitz, on Cavalier's Lady Bountiful; second, Ferndell Farms, on Ferndell's Mode, 43290; third, Adam Seitz; fourth, Ferndell Farms, on Ferndell's Fidelity; fifth, Wm. Galloway, on Lady Margaret 2d.

Champion Bull, Two Years Old or Over—Adam Seitz, on Bargenrock Rising Star, 14843.

Champion Bull, Under Two Years Old—Adam Seitz, on Cavalier's Lord Rosberg, 17856.

Champion Cow, Two Years Old or Over—Adam Seitz, on Imp. Kilnford Bell 4th, 32797.

Champion Heifer, Under Two Years Old—Wm. Galloway, on Nona Good Gift, 39923.

Grand Champion Bull—Adam Seitz, on Barganrock Rising Star, 14843.

Grand Champion Cow or Heifer—Adam Seitz, on Imp. Kilnford Bell 4th, 32797.

Graded Herd—First, Adam Seitz; second, Ferndell Farms; third, Dr. David Roberts; fourth, Wm. Galloway; fifth, Adam Seitz.

Breeders' Young Herd—First, Wm. Galloway; second, Adam Seitz; third, Ferndell Farms; fourth, Dr. David Roberts; fifth, Ferndell Farms.

Breeders' Calf Herd—First, Adam Seitz; second, Wm. Galloway; third, Dr. David Roberts; fourth, Ferndell Farms.

Get of Sire—First ,Adam Seitz; second, Wm. Galloway; tihrd Adam Seitz, fourth, Ferndell Farms; fifth, Dr. David Roberts.

Produce of Cow—First, Wm. Galloway; second, Adam Seitz; third, Dr. David Roberts; fourth, Adam Seitz; fifth, Dr. David Roberts.

Premier Exhibitor—Adam Seitz.

Premier Breeder—Adam Seitz.

SPECIAL PRIZE OFFERED BY THE AYRSHIRE BREEDERS' ASSOCIATION.

To the Exhibitor Winning the Most Money on Single Animals Bred by Himself—Adam Seitz.

BROWN SWISS.

JUDGE .... PROF. H. G. VAN PELT, Waterloo, Ia.

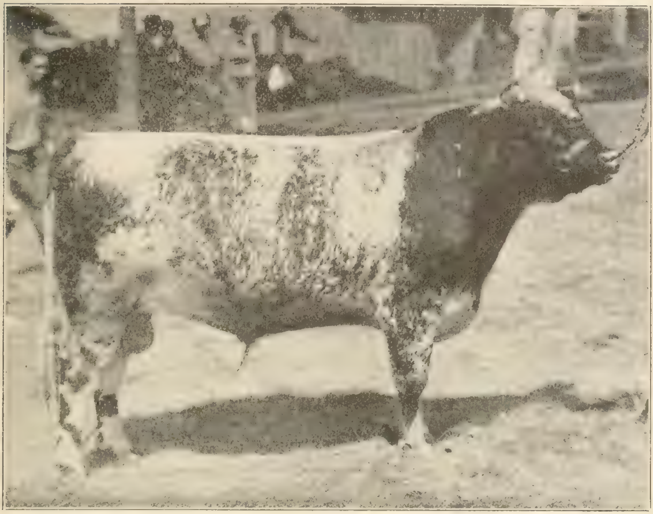
EXHIBITORS.

H. W. Ayers, Honey Creek, Wis.; S. B. Hefty & Son, Renwick, Ia.

AWARDS.

First. H. W. Ayers, on Merney's 2d Son, 3280; second, S. B. Hefty & Son, on Barton, 4078.

Bull Two Years Under Three—First, S. B. Hefty & Son, on Major B. V. T., 4735.



Prize-winning senior yearling Shorthorn bull at the 1916 Iowa State Fair, bred and exhibited by Smith and Sons, West Branch, Iowa.

Bull One Year Under Two—First, H. W. Ayers, on Merney's Nephew, 5123; second, S. B. Hefty & Son, on H. General, 5277; third, S. B. Hefty & Son, on Sweepstake 1st, 5033.

Bull, Senior Calf—First, H. W. Ayers, on Toney; second, H. W. Ayers, on Columbus A.; third, S. B. Hefty & Son, on Bravour, 5280.

Bull, Junior Calf—First, H. W. Ayers, on Bobbie; second, S. B. Hefty & Son, on Extra Pride, 5281.

Cow Four Years or Over—First, H. W. Ayers, on Browney B., 3968; second, S. B. Hefty & Son, on Louretta C., 2889; third, S. B. Hefty & Son, on Daisy H. H., 5600.

Cow Three Years Under Four—First, S. B. Hefty & Son, on Maiden 5904; second, S. B. Hefty & Son, on Schoeng 3d, 7630; third, H. W. Ayers ,on Zelia, 6121.

Heifer Two Years Under Three—First, H. W. Ayers, on Linda Long, 7410; second, S. B. Hefty & Son, on Alta B., 6822; third, S. B. Hefty & Son, on Grace Alderson, 6825; fourth, H. W. Ayers, on Zell's Merney, 6116.

Heifer, Senior Yearling—First, H. W. Ayers, on Master's Alpha, 7244; second, S. B. Hefty & Son, on Magdalena, 7226.

Heifer, Junior Yearling—First, S. B. Hefty & Son, on Maud 2d, 7227; second, H. W. Ayers, on Chris Rubel, 7246.

Heifer, Senior Calf—First, H. W. Ayers, on Jane C.; second, H. W. Ayers, on Columbus Browney; third, S. B. Hefty & Son, on Iowa Swiss Girl, 7632.

Heifer, Junior Calf—First, H. W. Ayers, on Queen of the Campus; second, H. W. Ayers, on Columbus Merney; third, S. B. Hefty & Son, on Mountain Girl.

Champion Bull, Two Years Old or Over—H. W. Ayers, on Merney's 2d Son, 3280.

Champion Bull, Under Two Years Old—H. W. Ayers, on Merney's Nephew, 5123.

Champion Cow, Two Years Old or Over—H. W. Ayers, on Browney B., 3968.

Champion Heifer, Under Two Yeras Old—S. B. Hefty & Son, on Maud 2d, 7227.

Grand Champion Bull—H. W. Ayers, on Merney's 2d Son, 3280.

Grand Champion Cow or Heifer—H. W. Ayers, on Browney B., 3968.

Graded Herd—First, H. W. Ayers; second, S. B. Hefty & Son.

Breeders' Young Herd—First, H. W. Ayers; second, S. B. Hefty & Son.

Breeders' Calf Herd—First, H. W. Ayers.

Get of Sire—First, H. W. Ayers; second, S. B. Hefty & Son.

Produce of Cow—First, H. W. Ayers; second, S. B. Hefty & Son.

Premier Exhibitor—H. W. Ayers.

Premier Breeder—H. W. Ayers.

SPECIAL PRIZE OFFERED BY THE BROWN SWISS CATTLE BREEDERS' ASSOCIATION.

Four Animals, Either Sex, Any Age, the Get of One Bull—First, H. W. Ayers.

FAT SHORT-HORNS—PURE BRED.

Steer, Spayed or Martin Heifer Two Years and Under Three—First, Walter J. Hill, on Benefactor; second, Wm. Herkelmann, on Robin.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Wm. Herkelmann, on Johnnie; second, Duran H. Summers; third, Duran H. Summers.

Steer, Spayed or Martin Heifer, Under One Year—First, Wm. Herkelmann, on Dock.

Champion Steer, Spayed or Martin Heifer—Walter J. Hill, on Benefactor.

Group of Three Head, Owned by Exhibitor—First, Wm. Herkelmann.

GRADE OR CROSS BRED.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Wm. Herkelmann, on George; second, Glen Alvin Windom, on Roan Buck; third, L. C. Oloff, on Avon King.

Steer, Spayed or Martin Heifer, Under One Year—First, L. C. Oloff, on Roan King; second, G. H. Burge.

Champion Steer, Spayed or Martin Heifer—Wm. Herkelmann, on George.

FAT HEREFORDS.

PURE BRED.

Steer, Spayed or Martin Heifer, Two Years Under Three—First, Cyrus A. Tow, on Fairview Byron, 448709; second, Wm. Andrews & Sons, on Bonnie Boy, 133; third, E. W. Kreischer, on Beaumont Westor, 525261; fourth, E. M. Cassady & Son, on Top Notcher 3d, 166.

Steer, Spayed or Martin Heifer, One Year Under Two—First, Robert H. Hazlett, on Hazford Lad 6th, 493289; second, Cyrus A. Tow, on Standard P., 159; third, E. M. Cassady & Son, on Beau Maynard, 507724; fourth, E. M. Cassady & Son, on Deacon, 156.

Steer, Spayed or Martin Heifer, Under One Year—First, Cyrus A. Tow, on Bondsman's Boy, 525589; second, E. M. Cassady & Son, on Ridge Boy, 541736.

Champion Steer, Spayed or Martin Heifer—Cyrus A. Tow, on Bondsman's Boy, 525589.

Group of Three Head, Owned by Exhibitor—First, Cyrus A. Tow; second, E. M. Cassady & Son.

GRADE OR CROSS BRED.

Steer, Spayed or Martin Heifer, Two Years Under Three—First, E. M. Cassady & Son, on Steve.

Steer, Spayed or Martin Heifer, One Year, Under Two—First, E. M. Cassady & Son, on Jack; second, Donald C. Hill, on Jack Johnson.

Steer, Spayed or Martin Heifer, Under One Year—First, E. M. Cassady & Son, on Bernie.

Champion Steer, Spayed or Martin Heifer—First, E. M. Cassady & Son, on Bernie.

Group of Three Head, Owned by Exhibitor—First, E. M. Cassady & Son.

FAT ABERDEEN ANGUS.

PURE BRED.

Steer, Spayed or Martin Heifer, Two Years and Under Three—First, Congdon & Battles, on Loyal of Meadow Brook; second, C. D. & E. F. Caldwell, on Berg; third, L. R. Kershaw, on Proud Lad 2d.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, L. H. Kershaw, on Best Ever; second, C. D. & E. F. Caldwell.

Steer, Spayed or Martin Heifer, Under One Year—First, C. D. & E. F. Caldwell, on Luckily.

Champion Steer, Spayed or Martin Heifer—Congdon & Battles, on Loyal of Meadow Brook.

Group of Three Head, Owned by Exhibitor—First, C. D. & E. F. Caldwell.

GRADE OR CROSS BRED.

Steer, Spayed or Martin Heifer, Two Years and Under Three—Chas. Escher & Escher & Ryan, on King Edward.

Steer, Spayed or Martin Heifer, One Year and Under Two—First, Escher & Ryan, on The Kaiser; second, L. R. Kershaw, on College Choice; third, Paul Jackson.

Steer, Spayed or Martin Heifer, Under One Year—First, Escher & Ryan, on Carranza.

Champion Steer, Spayed or Martin Heifer—Escher & Ryan, on King Edward.

Croup of Three Head, Owned by Exhibitor—First, Escher & Ryan.

IOWA BOYS BABY BEEF FEEDING CONTEST.

JUDGES, PROF. W. H. PEW, Ames, Ia., W. J. KENNEDY, Sioux City, Ia.

Steer or Heifer, Any Breed, Pure Bred, Grade, or Cross Bred, Dropped Between February 1 and October 1, 1915—First, Duran H. Summers; second, Duran H. Summers; third, Clinton Beresford; fourth, Alden Wright; fifth, Everett Wright; sixth, Clinton Beresford; seventh, Paul Jackson; eighth, Alvin Linden; ninth, Clark Hall; tenth, Paul Jackson; eleventh, Neal J. Bixler; twelfth, Harold Jones; thirteenth, Donald Hill.

SWINE DEPARTMENT.

POLAND CHINA.

SUPERINTENDENT........................CYRUS A. TOW, Norway, Iowa.

EXHIBITORS.

Anderson Bros., West Liberty; R. R. Blake, Waukee; A. J. Banks, Montour; John D. Blauer, Tingley; W. E. Conrad, Melbourne; C. H Christianson, Story City; I. J. Conrad, Melbourne; J. H. Cope, Carlisle; M. A. Dowling, Reasnor; S. L. Farlow, Ankeny; John H. Fitch, Lake City; H. Wade Gillis and Osbert Allender & Son, Mt. Pleasant; Hudson Bros., Knoxville; W. C. Jack & Son, West Liberty; Nels C. Jensen, Exira; Alfred Joens, Manning; H. J. Jones, Wapello; A. & J. C. Johnson, Lynnville; Frank Justice, Berwick; H. J. Kell, Ankeny; C. F. Keeling, Avon; Joe Kramer, Elkader; W. A. Leet, Manning; Wm. Lentz, Ankeny; O. R. Mark, Adel; M. P. Lydon, Cresco; B.

F. Marmion, Farmington; G. F. Marshall, Monroe; Jesse Marsh & Son, Carlisle; J. A. Mason, Carlisle; J. T. Molloy & Son, Albion; J. Cyrus Morton, Indianola; H. A. Overton, Knoxville; Isaac Overton, Knoxville; F. G. Paul, Marshalltown; D. H. Paul, Laurel; G. A. Perry, Knoxville; C. W. Phillips, New Sharon; I. M. Reed, Oskaloosa; Fred G. Reis, Indianola; J. L. Risley, Ames; F. P. Robinson & Son, Maryville, Mo.; George Ruby, Lacey; Merrill Satterthwaite, Muscatine; A. D. Severe, Dows; Fred Sievers, Audubon; M. Shivvers & Son, Knoxville; Mark I. Shaw, Monroe; Silvis H. Stamm, Orillia; J. H. Thomas, Lucas; W. L. Wiley, Menlo.

JUDGE ....THOMAS A. SHATTUCK, Hastings, Neb.

Aged Boar—First, Fred Sievers, on Long Big Bone, 227069; second, Anderson Bros., on A's Mastodon, 235907; third, F. G. Paul, on Mouw's Black Jumbo, 218507; fourth, M. A. Dowling, on Orange Boy, 230167; fifth, Nels C. Jensen, on Orange B., 74972; sixth, H. B. Jones, on Tec Leader 2d, 229229; seventh, George Ruby, on Mouw's Jumbo B., 205055.

Senior Yearling Boar—First, F. G. Paul, on Black Jumbo Giant, 255829; second, H. A. Overton & Son, on Black Big Orphan, 241255; third, H. D. Paul, on Big Look's Choice, 237033; fourth, M. Shivvers & Son, on Long Price; fifth, John H. Fitch, on Giant Orange, 237849; sixth, J. L. Risley, on Black Crow, 244689; seventh, Silvis H. Stamm, on Big Bone Hadley, 237491.

Junior Yearling Boar—First, Nels C. Jensen, on Smooth Big Bob, 75999; second, Anderson Bros., on Smooth Bob, 245277; third, G. F. Marshall & Son, on Giant Jumbo, 250283; fourth, J. L. Risley, on Big Jones 244683; fifth, G. F. Marshall, on Black Jumbo, 250281; sixth, Joe Kramer, on Expansion Wonder, 240895; seventh, Jesse Marsh & Son, on Big Price.

Senior Boar Pig—First, H. Wade Gillis, on G. & A.'s King Joe, 253283; second, Joe Kramer, on K's New Banker, 255943; third, S. L. Farlow, on Big Bub, 256127; fourth, C. H. Christianson, on Blue Valley Wonder, 252509; fifth, Anderson Bros., on John Knox, 245273; sixth, H. A. Overton & Son, on Half Ton's Equal, 255337; seventh, S. L. Farlow on Valley Big Bone, 256123.

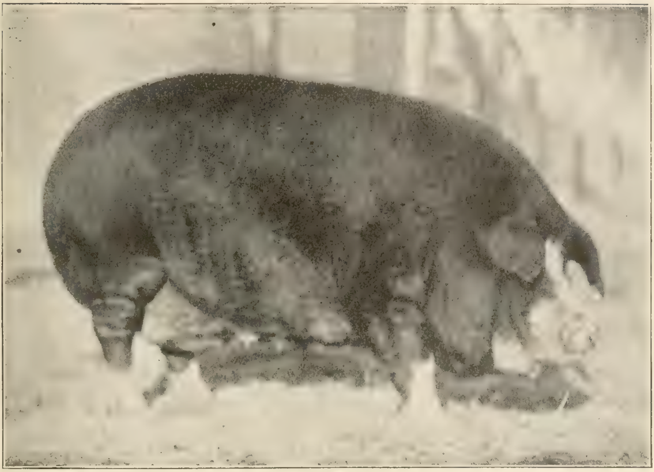
Junior Boar Pig—First, M. A. Dowling, on Long Orange, 255519; second, M. A. Dowling, on D's Orange, 255521; third, Anderson Bros.; fourth, Mark I. Shaw; fifth, G. F. Marshall & Son, on Jumbo Wonder, 255387; sixth, G. F. Marshall & Son, on Wonder Ex, 255381; seventh, M. Shivvers & Son, on Chief Jumbo 2d.

Aged Sow—First, Isaac Overton, on Miss Big Knox, 503412; second, H. A. Overton & Son, on Miss Price 4th, 507730; third, J. T. Molloy & Son, on Jumbo Girl, 585316; fourth, C. W. Phillips, on A Giantess, 562538; fifth, M. Shivvers & Son, on Queenee 3d, 178288; sixth, C. H. Christianson, on Black Rose, 548186; seventh, I. J. Conrad, on Black Princess, 564206.

Senior Yearling Sow—First, G. F. Marshall, on Columbus Surprise, 588474; second, G. F. Marshall, on Miss Big Jumbo, 588482; third, S. L. Farlow, on Giantess Maid, 589770; fourth, M. Shivvers & Son, on Jumbo's Giantess; fifth, F. G. Paul, on Jumbo's Giantess, 589194; sixth, D. H. Paul, on Lady Look, 587840; seventh, F. G. Paul, on Modesty Whiteface, 589188.

Junior Yearling Sow—First, H. A. Overton & Son, on Big Knox Lady, 551082; second, G. F. Marshall & Son, on Queen of Jumbo's, 588476; third, M. Shivvers & Son, on Miss Jumbo; fourth, M. Shivvers & Son, on Mollie Wonder; fifth, W. A. Leet, on Miss Wonderful, 188332; sixth, Anderson Bros., on Jumbo's Miss 5th, 587366; seventh, F. G. Paul, on High Black Modesty, 589190.

Senior Sow Pig—First, F. G. Paul, on Black Big Modesty, 589192; second, I. J. Conrad, on Mammoth Lady, 588646; third, M. Shivvers & Son, on Jumbo's Giantess 3d; fourth, Anderson Bros., on Jumbo Lady 1st, 589404; fifth, M. A. Dowling, on Orange Lady, 588754; sixth, Anderson Bros., on Jumbo Lady 2d, 589406; seventh, M. A. Dowling, on Orange Lady 2d, 588756.



Grand champion Poland China sow, owned and exhibited at the 1916 Iowa State Fair by Isaac Overton, Knoxville, Iowa.

Junior Sow Pig—First, G. F. Marshall & Son, on Wonder's Giantess, 588484; second, G. F. Marshall & Son, on Miss Wonder Ex. 588466; third, M. A. Dowling, on Orange Maid, 588758; fourth, D. H. Paul, on Futurity Look; fifth, Anderson Bros.; sixth, M. A. Dowling, on Orange Maid 2d, 588760; seventh, Joe Kramer.

Senior Champion Boar—Fred Sievers, on Long Big Bone, 227069.

Senior Champion Sow—Isaac Overton, on Miss Big Knox, 503412.

Junior Champion Boar—H. Wade Gillis, on G. & A.'s King Joe.

Junior Champion Sow—F. G. Paul.

Grand Champion Boar—Fred Sievers, on Long Big Bone, 227069.

Grand Champion Sow—Isaac Overton, on Miss Big Knox, 503412.

Aged Herd, Owned by Exhibitor—First, M. Shivvers & Son; second, G. F. Marshall & Son; third, Anderson Bros.; fourth, Nels C. Jensen; fifth, M. Shivvers & Son; sixth, F. G. Paul; seventh, D. H. Paul.

Aged Herd, Bred and Owned by Exhibitor—First, M. Shivvers & Son; second, G. F. Marshall & Son; third, Nels Jensen; fourth, M. Shivvers & Son; fifth, F. G. Paul; sixth, D. H. Paul; seventh, I. J. Conrad.

Young Herd, owned by Exhibitor—First, G. F. Mashall & Son; second, M. A. Dowling; third, Anderson Bros.; fourth, I. J. Conrad; fifth, M. Shivvers & Son; sixth, M. Shivvers & Son; seventh D. H. Paul.

Young Herd, Berd and Owned by Exhibitor—First, G. F. Marshall & Son; second, M. A. Dowling; third, Anderson Bros.; fourth, I. J. Conrad; fifth, M. Shivvers & Son; sixth, M. Shivvers & Son; seventh, D. H. Paul.

Get of Sire—First, Isaac Overton; second, F. G. Paul; third, M. A. Dowling; fourth, G. F. Marshall & Son; fifth, G. F. Marshall & Son; sixth, M. Shivvers & Son; seventh, I. J. Conrad.

Produce of Dam—First, M. Shivvers & Son; second, M. A. Dowling; third, G. F. Marshall & Son; fourth, G. F. Marshall & Son; fifth, I. J. Conrad; sixth, Anderson Bros.; seventh, F. G. Paul.

POLAND CHINA FUTURITY.

FALL PIGS.

Boars—First, Joe Kramer; second, H. A. Overton & Son; third, S. L. Farlow; fourth, R. R. Blake; fifth, Anderson Bros.; sixth, G. F. Marshall & Sons.

Sows—First, I. J. Conrad; second, M. Shivvers & Son; third, Anderson Bros.; fourth, M. A. Dowling; fifth, Anderson Bros.; sixth, M. A. Dowling.

SPRING PIGS.

Boars—First, M. A. Dowling; second, M. A. Dowling; third, Mark I. Shaw; fourth, G. F. Marshall & Son; fifth, G. F. Marshall & Son; sixth, H. A. Overton & Son; seventh, M. Shivvers & Son; eighth, D. H. Paul.

Sows—First, G. F. Marshall & Sons; second, M. A. Dowling; third, D. H Paul; fourth, Anderson Bros.; fifth, M. A. Dowling; sixth, Joe Kramer; seventh, F. G. Paul; eighth, Mark I. Shaw.

Litters of Four—First, M. A. Dowling; second, G. F. Marshall & Son; third, D. H. Paul; fourth, Anderson Bros.; fifth, Mark I. Shaw; sixth, H. A. Overton; seventh, G. F. Marshall & Sons; eighth, F. G. Paul.

DUROC JERSEY.

EXHIBITORS.

T. E. Abbott, Menlo; A. P. Alsin, Boone; D. Birt, Auburn; Fred Bonnesen, Kimballton; F. B. Butterfield, Ankeny; Carlson & Trier, Washington; J. W. Cartwright, Burlington; E. E. Cheever, Webster City; M. C. Cramer, Monroe; Frank N. Crow, Oxford; Arthur Dearinger, Reasnor; Frank Desmond, Atlantic; C. A. DeVaul, Inwood; Economy Stock Farm, Shenandoah; J. S. Fawcett & Son, West Liberty; J. W. Garvey, Thayer, Ill.; Myles Harkin, Pleasantville; R. J. Harding, Macedonia; E. J. Hawker, West Libery; W. A. Hooper, Runnells; C. B. Jarnagin, Monroe; W. H. Johnston, Ross; W. A. Kellogg, Legrand; John Krebs, Riverside; James M. Lane, Knoxville; Lewie Lein, Roland; Grant Lynn, Spirit Lake; H. A. McCaffree, Janesville; R. G. McDuff, Monroe; A. O. McMullen, Estherville; Maple Park Farm, Virginia, Ill.; E. A. Morris, Webster City; D. Nauman & Son, West Liberty; C. M. Reed, Guthrie Center; G. A. Romey & Ed Gurtin, Melvin; W. B. Shaw, Monroe; R. M. Skillen, Greene; M. Spencer, Audubon; C. R. Steele, Ireton; C. J. Swale, Fredericksburg; S. S. Templeton & Sons, Monroe; John Thompson, Lake City; U. S. Indian School, Genoa, Nebr.; Dr. J. B. Unsell, Louisiana, Mo.; Urbanside Farm, Waterloo; R. C. Veenker, George; J. A. Vipond & Sons, Algona; Jacob D. Waltemeyer, Melbourne; J. Wellendorf & Son, Algona; Grant White, Afton; White & Chandler, Afton; O. E. Wilcox, Deep River; C. A. Zellmer, Atlantic.

JUDGE..............................WILSON ROWE, Davenport, Iowa.

AWARDS.

Aged Boar—First, Jacob D. Waltemeyer & Son, on Great Wonder, 180989; second, Dr. J. B. Unsell, on World's Fair Colonel, 59257; third, Economy Stock Farm, on Highland Chief 2d, 155269; fourth, G. A. Romey & Ed Gurtin, on Sunkist High Model, 172823; fifth, C. R. Steele, on Prince Educator, 167331; sixth, Grant Lynn, on Iowa Volunteer, 165165; seventh, R. M. Skillen, on John's Orion Again, 65057.

Senior Yearling Boar—First, M. Spencer, on Critic's Model, 192145; second, W. H. Johnston, on Kamo Col., 200427; third, A. P. Alsin, on A. P's Disturber; fourth, A. D. Freed, on Long Crimson 4th, 179289; fifth, Fred Bonnesen, on Orion's Perfection, 187205; sixth, Arthur Dearinger, on Oak Knoll Wonder, 201457; seventh, J. W. Cartwright, on Orion Improver, 182205.

Junior Yearling Boar—First, Urbanside Farm, on Royal Gano,188177; second, U. S. Indian School, on Critic Modeler, 202467; third, Dr. J. B. Unsell, on

Major Wonder, 72423; fourth, John Thompson, on Cottonwood Prince, 180281; fifth, J. W. Garvey, on Col's Improver Again, 190969; sixth, Jacob D. Waltemeyer & Son, on Grand Model 33d, 201841; seventh, U. S. Indian School, on Nebraska Wonder, 202469.

Senior Boar Pig—First, J. Wellendorf & Son, on Algos Giant, 201287; second, Carlson & Trier, on Dutch Model, 201931; third, C. M. Reed, on Miller Boy, 143382; fourth, D. J. B. Unsell, on Clover Leaf Realization; fifth, C. M. Reed, on Our Choice, 199183; sixth, R. J. Harding, on Model King, 202073; seventh, J. Wellendorf & Son, on Model Algo, 201285.

Junior Boar Pig—First, R. G. McDuff, on Oak Knoll Boy, 201455; second Urbanside Farm; third, Economy Stock Farm, on Burks on Top; fourth John Krebs, on Durock, 202683; fifth, Urbanside Farm; sixth, W. B. Shaw, seventh, C. A. Zellner, on Winning Wonder, 201677.

Aged Sow—First, U. S. Indian School, on Critic's Perfection, 400236; second Jacob D. Waltemeyer & Son, on Model Lady 4th, 410536; fourth, Jacob D. Waltemeyer & Son, on Beauitful Wonder 1st, 417788; fifth, R. J. Harding, on R. J's Brightness, 57832; sixth, John Thompson, on Golden Queen 11, 407792; seventh, J. W. Cartwright, on J. W's Pride, 178448.

Senior Yearling Sow—First, John Krebs, on Inze 11th, 488684; second, J. W. Cartwright, on Topsy's Queen, 454900; third, Jacob D .Waltemeyer & Son, on Grand Lady 6th, 454264; fourth, Economy Stock Farm, on Jewel's Good Enuff, 462334; fifth, J. W. Cartwright, on Colonel Princess, 454904; sixth, A. P. Alsin, on Col. Lady 4th, 455250; seventh, Dr. J. B. Unsell, on Bonnie Clover Leaf, 160246.

Junior Yearling Sow—First, D. Nauman & Son, on Miss Crimson, 504052; second, Jacob D. Waltemeyer & Son, on Grand Lady 19th, 509508; third, Dr. J. B. Unsell, on Clover Leaf Queen 2d, 160432; fourth, Dr. J. B. Unsell, on Clover Leaf Wonder, 160434; fifth, Carlson & Trier, on Model Lady, 512446; sixth, Carlson & Trier, on Model Lady 2d, 512448; seventh, John Krebs, on Iowa Rose 12th, 510776.

Senior Sow Pig—Jacob D. Waltemeyer & Son, on Grand Lady 22d, 509510; second, R. J. Harding, on Model Gold, 509826; third, Economy Stock Farm, on Burk's High, 482326; fourth, Jacob D. Waltemeyer & Son, on Grand Lady 23d, 509512; fifth, White & Chandler, on Proud Lady, 508924; sixth, Fred Bonnesen, on Lassie's Belle, 511412; seventh, Economy Stock Farm, on Burk's Right, 482336.

Junior Sow Pig—First, Jacob D. Waltemeyer & Son; second, Economy Stock Farm, on Burk Queen; third, Grant White; fourth, John Krebs, on Goldie 30th; fifth, Grant White; sixth, Economy Stock Farm, on Burk Lady; seventh, Lewis Lein, on Iowa Queen.

Senior Champion Boar—Jacob D. Waltemeyer & on, on Great Wonder, 190989.

Senior Champion Sow—U. S. Indian School, on Critic's Perfection, 400236.

Junior Champion Boar—J. Wellendorf & Son, on Algos Giant, 201287.

Junior Champion Sow—Jacob D. Waltemeyer & Son, on Grand Lady 22d, 509510.

Grand Champion Boar—Jacob D. Waltemeyer & Son, on Great Wonder, 190989.

Grand Champion Sow—U. S. Indian School, on Critic's Perfection, 400236.

Aged Herd, Owned by Exhibitor—First, Jacob D. Waltemeyer & Son; second, U. S. Indian School; third, Dr. J. B. Unsell; fourth, Economy Stock Farm; fifth, Jacob D. Waltemeyer; sixth, J. W. Cartwright; seventh, John Thompson.

Aged Herd, Owned and Bred by Exhibitor—First, Jacob D. Waltemeyer & Son; second, U. S. Indian School; third, Economy Stock Farm; fourth, J. W. Cartwright; fifth, J. W. Cartwright.

Young Herd, Owned by Exhibitor—First, Jacob D. Waltemeyer & Son; second, Economy Stock Farm; third Jacob D. Waltemeyer & Son; fourth, J.

W. Cartwright; fifth, Urbanside Farm; sixth, J. W. Cartwright; seventh, Fred Bonnesen.

Young Herd, Owned and Bred by Exhibitor—First, Jacob D. Waltemeyer & Son; second, Economy Stock Farm; third, Jacob Waltemeyer & Son; fourth, Urbanside Farm; fifth, J. W. Cartwright; sixth, J. W. Cartwright; seventh, Fred Bonnesen.

Get of Sire—Jacob D. Waltemeyer & Son; second, Economy Stock Farm; third, U. S. Indian School; fourth, Jacob D. Waltemeyer & Son; fifth, J. W. Cartwright; sixth, J. W. Cartwright; seventh, Urbanside Farm.

Produce of Dam—First, Jacob D. Waltemeyer; second, Economy Stock Farm; third, U. S. Indian School; fourth, J. W. Cartwright; fifth, J. W. Cartwright; sixth, Urbanside Farm; seventh, C. A. Zellmer.

DUROC JERSEY FUTURITY.

SPRING PIGS.

Boars—First, R. G. McDuff, on Oak Knoll Boy, 201455; second, Economy Stock Farm, on Berk on Top; third, John Krebs, on Durock, 202683; fourth, J. D. Waltemeyer & Son, on Grand Golden 2d; fifth, C. A. Zellmer; sixth, D. Nauman & Son, on Iowa Wonder, 201859; seventh, D. Nauman & Son, on Golden Major, 203065; eighth, C. A. Zellmer, on Big Bend.

Sows—First, J. D. Waltemeyer & Son, on Golden Lady 29th; second, Economy Stock Farm, on Burk Queen; third, John Krebs, on Goldie "30"; fourth, Economy Stock Farm on Burks Lady; fifth, Economy Stock Farm, on Burks Pet; sixth, C. A. Zellmer, on Our Queen; seventh, J. W. Cartwright, on Model Princess; eighth, D. Nauman & Son, on Grand Model Grace.

Litters of Four—First, Economy Stock Farm; second, R. G. McDuff; third, J. W. Cartwright; fourth, C. A. Zellmer; fifth, Arthur Dearinger; sixth, D. Nauman & Son; seventh, D. Nauman & Son; eighth, D. Nauman & Son.

SPECIAL PRIZE OFFERED BY THE AMERICAN DUROC JERSEY SWINE BREEDERS' ASSOCIATION.

Young Herd Bred and Owned by Exhibitor (Iowa Special)—First, J. D. Waltemeyer & Son; second, J. W. Cartwright; third, Economy Stock Farm; fourth, Economy Stock Farm.

Aged Herd, Bred and Owned by Exhibitor (Open Class)—First, J. D. Waltemeyer & Son; second, Dr. J. B. Unsell.

Young Herd, Bred and Owned by Exhibitor (Open Class)—First, J. D. Waltemeyer & Son; second, Dr. J. B. Unsell

CHESTER WHITE.

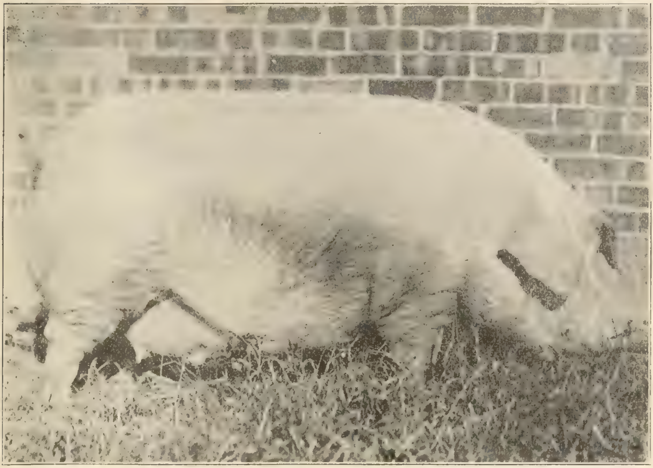
EXHIBITORS.

A. F. Anderson, Selma; Alden Anderson, Story City; M. Armentrout, Botna; W. T. Barr, Ames; George Bobst, Hampton; B. M. Boyer & Son, Farmington; Ora J. Brouhard, Colo; Raymond E. Brown, Dunlap; W. R. Crawford, Libertyville; Geo. W. DeBar, Aurora; Harley DeBar, Aurora; F. B. Dickerson, Knoxville; Donal M. Dove, Janesville; W H. Dunbar, Jefferson, Frank A. Gould & Son, Rockwell City; F. E. Humphrey, North English; A. T. Jones & Sons, Everly; J. H. Lachmiller, Webster City; George A. Lasley, Selma; E. L. Leavens, Shell Rock; Will Michael, Selma; Charles Mitchell, Webster City; J. H. & Duke Mahannah, North English; E. L. Nagle & Son, Deep River; J. T. Perry, Selma; Fred Piplow, Aurora; C. S. Rock, West Liberty; P. H Sheridan, Vail; A. B. Somerville, Monroe; Geo. Steil, Algona; C. W. Steven, Collins; Bruce R. Vale, Bonaparte; Leonard Willey, Menlo; R. W. Williams, Iowa City.

JUDGE ....L. C. REESE, Prescott, Iowa

AWARDS.

Aged Boar—First, W. T. Barr, on William A., 26161; second, E. L. Nagle & Son, on Nagle's Kind, 17063; third, A. B. Somerville, on Long Wonder, 34497;



Champion Chester White sow, owned and exhibited at the 1916 Iowa State Fair by Nagle and Son, Deep River, Iowa.

fourth, Dr. F. E. Humphreys, on Acme King, 35433; fifth, J. H. Lachmiller, on Yankee Doodle, 32489.

Senior Yearling Boar—First, J H. & Duke Mahannah, on Izzy O. K. Wonder, 37021; second, B. M. Boyer & Son, on Rajah 32749; third, A. B. Somerville, on Con Wonder, 32797; fourth, W. T. Barr, on William King, 38109.

Junior Yearling Boar—First, Alden Anderson, on Supreme 38089; second, W. T. Barr, on William A.'s Model, 38101; third, Leonard Willey, on Willey's Model, 33899; fourth, F. G. Dickerson, on Industry's Big Bone; fifth, W. T. Barr, on William A's Goods, 38107; sixth, S. W. Stevens, on Shadeland Chief, 38485.

Senior Boar Pig—First, W. H. Dunbar; second, Alden Anderson, on Headlight, 38091; third, W. T. Barr, on William Again, 38105; fourth, E. L. Nagle & Son, on Ohio Chief, 18225; fifth, L. H. Lachmiller, on Combination Giant, 37983; sixth, A. B. Somerville, on Frank's Best, 38083; seventh, W. T. Barr, on William A's Pride, 38103.

Junior Boar Pig—First, Alden Anderson; second, J. H. & Duke Mahannah; third, E. L. Nagle & Son; fourth, George Steil; fifth, J. T. Perry; sixth, Ora J. Brouhard; seventh, A. F. Anderson.

Aged Sow—First, E. L. Nagle & Son, on International, 29382; second, Alden Anderson, on Eden Valley Queen, 55256; third, M. Armentrout, on Best of All, 62506; fourth, E. L. Nagle & Son, on Queen of All, 28018; fifth, Alden Anderson, on Fancy Queen, 59356; sixth, W. H. Dunbar, on White Belle, 45724; seventh, Raymond E Brown, on Queen, 57034.

Senior Yearling Sow—First, J. H. Lachmiller, on Arline, 84504; second, W. T. Barr, on Highland Belle, 84776; third, A. B. Somerville, on Chester Girl, 72306.

Junior Yearling Sow—First, W. T. Barr, on Better Goods 2d, 84774; second, Charles Mitchell, on Lenora Goods 2d, 84382; third, A. B. Somerville, on Irene 7th; fourth, E. L. Nagle & Son, on Mollie Harden; fifth, M. Armentrout, on Kent's Ideal 1st, 85320; sixth, W. T. Barr, on Highland Lily 3d, 84766; seventh, M. Armentrout.

Senior Sow Pig—First, E. L. Nagle & Son, on Queen Again, 31634; second. W. T. Barr, on Lenora Queen 3d, 84770; third, Alden Anderson, on Security, 84738; fourth, W. T. Barr, on Lenora Queen 2d, 84772; fifth, Alden Anderson on Security 2d, 84736; sixth, M. Armentrout; seventh, E. L. Nagle & Son, on Sylvia, 31632.

Junior Sow Pig—First, E. L. Nagle & Son; second, J. H. & Duke Mahannah; third, Dr. F. E. Humphreys, on Acme Helen, 84140; fourth, J. H. & Duke Mahannah; fifth, E. L. Nagle & Son; sixth, Charles Mitchell; seventh, P. H Sheridan.

Senior Champion Boar—W. T. Barr.

Senior Champion Sow—E. L. Nagle & Son.

Junior Champion Boar—W. H. Dunbar.

Junior Champion Sow—E. L. Nagle & Son.

Grand Champion Boar—W. T. Barr.

Grand Champion Sow—E. L. Nagle & Son.

Aged Herd, Owned by Exhibitor—First, W. T. Barr; second, Alden Anderson; third, E. L. Nagle & Son; fourth, M. Armentrout

Aged Herd, Owned and Bred by Exhibitor—First, W. T. Barr.

Young Herd, Owned by Exhibitor—First, Alden Anderson; second, W. T. Barr; third, E. L. Nagle & Son; fourth, J. H. & Duke Mahannah; fifth, E. L. Nagle & Son; sixth, Dr. F. E. Humphreys; seventh, M. Armentrout.

Young Herd, Owned and Bred by Exhibitor—First, Alden Anderson; second. W. T Barr; third, E. L. Nagle & Son; fourth, J. H. & Duke Mahannah; fifth, E. L. Nagle & Son; sixth, Dr. F. E. Humphreys.

Get of Sire—W. T. Barr; second, Alden Anderson; third, W. T. Barr; fourth, E. L. Nagle & Son; fifth, J. H. & Duke Mahannah; sixth, E. L. Nagle & Son; seventh, M. Armentrout.

Produce of Dam—First, W. T Barr; second, E. L. Nagle & Son; third, Alden Anderson; fourth, J. H. & Duke Mahannah; fifth, E. L. Nagle & Son; sixth, M. Armentrout; seventh, M. Armentrout.

BERKSHIRE.

EXHIBITORS

W. R. Crawford, Libertyville; Haynes & Taylor, Guthrie Center; Iowana Farms, Davenport; Sutton Farm, Lawrence, Kan.; Brae Burn Farm, Lake Forest, Ill.

JUDGE ....N. H. GENTRY, Sedalia, Mo.

AWARDS.

Aged Boar—First, Iowana Farms, on Rival's Iowana Baron, 172535; second, Sutton Farm, on Duke's Bacon 8th, 151368; third, Iowana Farms, on Iowana Rival Champion, 194728.

Senior Yearling Boar—First, Sutton Farm on Scheer Tips Duke 7th, 212266; second, Brae Burn Farm; third, Iowana Farms, on Artful King 11th, 210779.

Junior Yearling Boar—First, Sutton Farm, on Sutton's Improver, second, Iowana Farms on Iowana Rival 2d, 214514.

Senior Boar Pig—First, Brae Burn Farm; second, Brae Burn Farm; third, Iowana Farms, on Iowana Baron 14th, 217786; fourth, Sutton Farm, on Stempy's Classy Robinhood; fifth, Iowana Farms, on Iowana Royal 29th, 224794.

Junior Boar Pig—First, Iowana Farms, on Iowana Royal 25th, 224790; second, Sutton Farm; third, Sutton Farm; fourth, Iowana Farms, on Iowana Royal 26th, 224791; fifth, Brae Burn Farm; sixth, Brae Burn Farm.

Aged Sow—First, Iowana Farms, on Iowana Peaceful 2d, 179237; second, Brae Burn Farm, on Artful Belle 118, 163588; third, Brae Burn Farm, on Romford Belle 10th, 181821; fourth, Iowana Farms, on Iowana Peaceful 8th, 199226.

Senior Yearling Sow—First. Brae Burn Farm on Brae Burn Schoolmistress. 220278; second, Sutton Farm; third, Brae Burn Farm, on Duke's Lady Lee, 206785; fourth, Iowana Farms, on Iowana Duchess 25th, 210832.

Junior Yearling Sow—First, Iowana Farms, on Iowana Lady 32d, 211811; second, Iowana Farms, on Iowana Lady 17th, 211812; third, Brae Burn Farm; fourth, Brae Burn Farm; fifth, Sutton Farm, on Bacon's Duchess.

Senior Sow Pig—First, Sutton Farm, on Classy Stumpy; second, Brae Burn Farm; third, Brae Burn Farm; fourth, Iowana Farms, on Iowana Queen 29th, 224799; fifth, Iowana Farms, on Iowana Queen 31st, 224801.

Junior Sow Pig—First, Sutton Farm; second, Sutton Farm; third, Iowana Farms, on Iowana Rose 6th, 224787; fourth, Iowana Farms, on Iowana Rose 7th, 224788; fifth, Brae Burn Farm; sixth, Brae Burn Farm.

Senior Champion Boar—Iowana Farm, on Rival's Iowana Baron, 172535.

Senior Champion Sow—Iowana Farms, on Iowana's Peaceful 2d, 179237.

Junior Champion Boar—Brae Burn Farm.

Junior Champion Sow—Sutton Farm, on Classy Stumpy, 224799.

Grand Champion Boar—Iowana Farms, on Rival's Iowana Baron, 172535.

Grand Champion Sow—Iowana Farms, on Iowana's Peaceful 2d, 179237.

Aged Herd, Owned by Exhibitor—First, Iowana Farms; second, Iowana Farms: third, Brae Burn Farm.

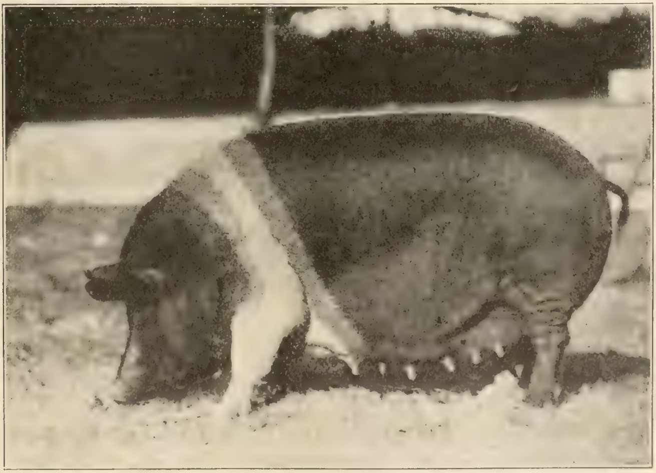
Aged Herd, Owned and Bred by Exhibitor—First, Iowana Farms; second, Iowana Farms; third, Brae Burn Farm.

Young Herd, Owned by Exhibitor—First, Brae Burn Farm; second, Sutton Farm; third, Iowana Farms; fourth, Iowana Farms.

Young Herd, Owned and Bred by Exhibitor—First, Brae Burn Farm; second, Sutton Farms; third, Iowana Farms; fourth, Iowana Farms.

Get of Sire—First, Iowana Farms; second, Brae Burn Farm; third, Sutton Farm.

Produce of Dam—First, Iowana Farms; second, Brae Burn Farm; third, Sutton Farm; fourth, Iowana Farms.



Grand champion Hampshire sow, owned and exhibited at the 1916 Iowa State Fair by Clayton Messenger, Keswick, Iowa.

HAMPSHIRE.

EXHIBITORS

W. O. Berkhiser & Son, Mt. Pleasant; F. S. Bratt, Arapahoe, Neb.; E E. Cheever, Webster City; T. C. Cole, Thurman; Edward Dooley, Selma; Charlie Feagins, Bussey; E. R. Hem, Selma; Clayton Messenger, Keswick; M. C. Morrison, Adelphi; O. C. Olson, Walnut; C. P Paulsen, Nora, Neb.; R. L. Pemberton, Legrand; C. M. Perrin, Mapleton; Art Shaw, Oskaloosa; Wickfield Farm, Cantril; W. F. Yingst, State Center.

JUDGE ....WILSON ROWE, Davenport, Iowa

AWARDS.

Aged Boar—First, C. P. Paulsen, on Cherokee Pattern, 23091; second, Wickfield Farm, on Lookout Lad, 20371; third, Clayton Messenger, on Keswick Lad, 28575; fourth, Wickfield Farm, on General Wickware, 26879; fifth, O. C. Olson, on Iowa Dude, 5439; sixth, C. S. Bratt, on Nebraska Boy, 27879; seventh, W. F. Yingst, on Longfellow's Goal, 27219.

Senior Yearling Boar—First, Wickfield Farm, on Chin Chin, 27703; second, R. L. Pemberton, on Major Boy, 28227; third, Clayton Messenger, on Scottish Boy 10th, 34769; fourth, W. O. Berkhiser & Son, on Pine Row Chief, 29005; fifth, Clayton Messenger, on Pat Boy, 28229; sixth, W. F Yingst, on Yingst Boy, 27599.

Junior Yearling Boar—First, C. P. Paulsen, on Paulsen's Star 85th, 34659; second, Wickfield Farm, on Wickfield Lad, 27861; third, Clayton Messenger, on Sir Dawson, 28962; fourth, R. L. Pemberton, on Joe's Best, 31179; fifth, C. P. Paulsen, on Paulsen's Star 87th, 34663; sixth, C. S. Bratt, on Tom, 33791; seventh, R. L. Pemberton, on Highland King, 34539.

Senior Boar Pig—First, Clayton Messenger, on Iowa Boy 5th, 34771; second, Wickfield Farm, on Silverheel, 34999; third, C. P. Paulsen, on Paulsen's Star 99th, 34653; fourth, C. S. Bratt, on Ben, 33795; fifth, Clayton Messenger, on Hawkeye King, 34783; sixth, Wickfield Farm, on Comedian, 35001; seventh, R. L. Pemberton, on Scottish Laddie, 34559.

Junior Boar Pig—First, Wickfield Farm, on Spellbinder; second, Wickfield Farm, on Twister; third, W O. Berkhiser & Son; fourth, Clayton Messenger, on Banker Boy, 34773; fifth, Clayton Messenger, on Monroe Boy, 34775; sixth, E. R. Hem, on Jeff; seventh, C. M. Perrin.

Aged Sow—First, Wickfield Farm, on Missouri's Best 4th, 20180; second, Wickfield Farm, on Hawkeye Lady, 52170; third, Clayton Messenger, on Mayflower 3d, 46126; fourth, Clayton Messenger, on Mayflower 5th, 46130; fifth, C. S. Bratt, on Beauty 8th, 47614; sixth, O. C. Olson, on Kentucky 3d, 26070; seventh, R. L. Pemberton, on Susan, 48316.

Senior Yearling Sow—First, Clayton Messenger, on Scottish Girl 4th, 54428; second, Wickfield Farm, on Hawkeye Sunbeam, 61884; third, C. S. Bratt, on Silver Queen 123d, 54210; fourth, Clayton Messenger, on Scottish Girl 5th, 54430; fifth, W. F. Yingst, on Linn Grove Queen, 54866; sixth, C. P. Paulsen, on Silver Queen 178th, 69912; seventh, Art Shaw, on Tango Tillie, 53712.

Junior Yearling Sow—First, Wickfield Farm, on Wickfield Beauty, 55198; second, Clayton Messenger, on Scottish Girl 6th, 54432; third, Clayton Messenger, on Pansy, 54434; fourth, Wickfield Farm, on Quality Girl, 55162; fifth, C. P Paulsen, on Silver Queen 170th, 69922; sixth, C. S. Bratt, on Ruth, 67696; seventh, O. C. Olson, on Minnie H., 55120.

Senior Sow Pig—First, Wickfield Farm, on Show Girl, 70026; second, Wickfield Farm, on Dream Girl, 70022; third, Clayton Messenger, on Mayflower Lady 1st, 69394; fourth, Clayton Messenger, on Mayflower 2d, 69396; fifth, W. F. Yingst, on Iowa Queen 2d; sixth, C. S. Bratt, on Beulah, 67702; seventh, W. F. Yingst, on Iowa Queen 1st.

Junior Sow Pig—First, Wickfield Farm; second, Wickfield Farm; third, Clayton Messenger, on Daisy May, 69406; fourth, Clayton Messenger, on Ethel

May, 69400; fifth, C. S. Bratt; sixth, C. S. Bratt; seventh, E. R. Hem, on Mabel.

Senior Champion Boar—C. P Paulsen, on Cherokee Pattern, 23091.

Senior Champion Sow—Clayton Messenger, on Scottish Girl 4th, 54428.

Junior Champion Boar—Clayton Messenger, on Iowa Boy 5th, 34771.

Junior Champion Sow—Wickfield Farm, on Show Girl, 70026.

Grand Champion Boar—C. P. Paulsen, on Cherokee Pattern, 23091.

Grand Champion Sow—Clayton Messenger, on Scottish Girl 4th, 54428.

Aged Herd, Owned by Exhibitor—First, Clayton Messenger; second, Wickfield Farm; third, Wickfield Farm; fourth, Clayton Messenger; fifth, O. C. Olson; sixth, C. S. Bratt; seventh, W. F. Yingst.

Aged Herd, Owned and Bred by Exhibitor—First, Clayton Messenger; second, Wickfield Farm; third, Clayton Messenger; fourth, C. S. Bratt; fifth, W. F. Yingst.

Young Herd, Owned by Exhibitor—First, Wickfield Farm; second, Wickfield Farm; third, Clayton Messenger; fourth, Clayton Messenger; fifth, W F. Yingst; sixth, W. F. Yingst; seventh, C. M. Perrin.

Young Herd, Owned and Bred by Exhibitor—First, Wickfield Farm; second, Wickfield Farm; third, Clayton Messenger; fourth, Clayton Messenger; fifth, W. F. Yingst; sixth, W. F. Yingst; seventh, C. M. Perrin.

Get of Sire—First, Clayton Messenger; second, Clayton Messenger; third, Wickfield Farm; fourth, Wickfield Farm; fifth, C. P. Paulsen; sixth, W. F. Yingst; seventh, W. F. Yingst.

Produce of Dam—First, Clayton Messenger; second, Clayton Messenger; third, Wickfield Farm; fourth, Wickfield Farm; fifth, C P. Paulsen; sixth, W. F. Yingst; seventh, W. F. Yingst.

SPECIAL PRIZE OFFERED BY THE HAMPSHIRE ADVOCATE.

Pair of Pigs (Boar and Sow), Under Six Months, Shown by a Resident of the State of Iowa—Wickfield Farm.

SPECIAL PRIZES OFFERED BY THE IOWA HAMPSHIRE BREEDERS' ASSOCIATION.

Boar and Three Sows, Over Six Months and Under Twelve Months, Exhibited by a Resident of Iowa—First, Wickfield Farm; second, Clayton Messenger; third, Art Shaw; fourth, W. F. Yingst; fifth, R. L. Pemberton; sixth, Wickfield Farm; seventh, W. F. Yingst.

Boar and Three Sows, Under Six Month, Exhibited by a Resident of Iowa—First, Wickfield Farm; second, Clayton Messenger; third, C. M Perrin; fourth, W. F. Yingst; fifth, O. C. Olson; sixth, W. O. Berkhiser & Son; seventh, R. L. Pemberton; eighth, Art Shaw.

Boar Pig, Under Six Months, Shown by a Resident of Iowa—Wickfield Farm.

Sow Pig, Under Six Months, Shown by a Resident of Iowa—C. M. Perrin.

SPECIAL PRIZES OFFERED BY THE AMERICAN HAMPSHIRE SWINE RECORD ASSOCIATION AND THE IOWA HAMPSHIRE BREEDERS' ASSOCIATION

Four Pigs, Any Sex, Under Six Months, Bred and Exhibited by a Resident of Iowa—First, Clayton Messenger; second, W. O. Berkhiser; third, O. C Olson.

LARGE YORKSHIRE.

EXHIBITORS.

F. M. Buck, Waukee; B. F. Davidson, Menlo; Haynes & Taylor, Guthrie Center; B. F. Kunkle, Redfield; H. E. Miller, Menlo; Carl C. Smith, Waukee.

JUDGE.................................C. C. ROUP, Iowa City, Iowa.

AWARDS.

Aged Boar—First, B. F. Davidson, on Deer Creek Eventor 3d, 19726; second, B. F. Davidson, on Lake Park Fashion, 18974; third, Haynes & Taylor, on Royal Rex 2d, 21701; fourth, F. M. Buck, on Prairie Lea Wonder, 19772;

fifth, Carl C. Smith, on Oak Grove Correction 2d, 21275.

Senior Yearling Boar—First, B. F. Davidson, on Davidson's Model 12th, 22269; second, F. M. Buck, on Meadow Glen Wonder 2d, 22673.

Junior Yearling Boar—First, B. F. Davidson, on Deer Creek Highclass 8th, 22688; second, B. F. Davidson, on Lake Park Long Lad, 23148, third, B. F Kunkle, on Deer Creek Romeo 4th, 23233; fourth, B. F. Kunkle, on Oak Grove Fancy, 23871; fifth, F. M. Buck, on Meadow Glen Dandy, 3d; sixth, Haynes & Taylor, on Dan D. Stuff 3d, 24247.

Senior Boar Pig—First, B. F. Davidson, on Deer Creek Modeler 5th, 24201; second, B. F. Kunkle, on Oak Grove Eventor 1st, 24260; third, B. F. Kunkle, on Oak Grove Eventor 2d, 24261; fourth, Haynes & Taylor, on Jim H., 24246.

Junior Boar Pig—First, B. F. Davidson, on Deer Creek Eventor 10th, 24200; second, B. F Davidson; third, F. M. Buck, on Meadow Glen Wonder 3d; fourth, Haynes & Taylor; fifth, F. M. Buck, on Meadow Glen Wonder 4th.

Aged Sow—First, B. F. Davidson, on Deer Creek Martha 5th, 14977; second, F. M. Buck, on Lake Park Augustine 3d, 16587; third, B. F. Davidson, on Deer Creek Topsy Queen 1st, 15648; fourth, B. F. Kunkle, on Oak Grove Pearl 1st, 17467; fifth, B. F. Kunkle, on Oak Grove Topnotch, 20684; sixth, F. M. Buck, on Mondamin Glen 3d, 17179.

Senior Yearling Sow—First, B. F. Kunkle, on Oak Grove Choice 1st, 23875; second, B. F Davidson, on Deer Creek Bell 40th, 22273; third, F. M. Buck, on Mondamin Gem, 5th.

Junior Yearling Sow—First, B. F. Davidson, on Deer Creek Classy Lass 5th, 22862; second, B. F. Davidson, on Deer Creek Elena 3d, 24199; third, F. M. Buck, on Gem of the Lea 7th; fourth, B. F. Kunkle, on Oak Grove Fancy 1st, 23874; fifth, Haynes & Taylor, on Deer Creek Nema 9th, 22693; sixth, B. F. Kunkle, on Oak Grove Fancy 2d, 23873.

Senior Sow Pig—First, B. F. Kunkle, on Oak Grove Nema 3d, 24258; second, Haynes & Taylor, on Clara H. 24250; third, Haynes & Taylor, on Minnie H., 24248; fourth, B. F. Davidson; fifth, B. F. Kunkle, on Oak Grove Nema 4th, 24259; sixth, F. M. Buck, on Meadow Glen Gem 2d.

Junior Sow Pig—First, B. F. Davidson; second, B. F. Davidson; third, F. M. Buck, on Meadow Glen Gem 5th; fourth, Haynes & Taylor; fifth, Haynes & Taylor; sixth, B. F. Kunkle, on Oak Grove Eventor 3d.

Senior Champion Boar—B. F. Davidson.

Senior Champion Sow—B. F Davidson.

Junior Champion Boar—B. F. Davidson.

Junior Champion Sow—B. F. Kunkle.

Grand Champion Boar—B. F. Davidson.

Grand Champion Sow—B. F. Davidson.

Aged Herd, Owned by Exhibitor—First, B. F. Davidson; second, B. F. Kunkle; third, Haynes & Taylor; fourth, F. M. Buck.

Aged Herd, Owned and Bred by Exhibitor—First, B F. Davidson; second, B. F. Kunkle; third, F. M. Buck.

Young Herd, Owned by Exhibitor—First, B. F. Davidson; second, B. F. Kunkle; third, Haynes & Taylor; fourth, F. M. Buck.

Young Herd, Owned and Bred by Exhibitor—First, B. F. Davidson; second, B. F. Kunkle; third, Haynes & Taylor; fourth, F. M. Buck.

Get of Sire—First, B. F Davidson; second, B. F. Kunkle; third, Haynes & Taylor; fourth, F. M. Buck.

Produce of Dam—First, B. F. Davidson; second, B. F. Kunkle; third, Haynes & Taylor; fourth, F. M. Buck.

SPECIAL PRIZES OFFERED BY THE AMERICAN YORKSHIRE CLUB.

Young Herd, Bred by Exhibitor—B. F. Davidson.

TAMWORTH.

EXHIBITORS.

J. B. Mackoy, Farragut; Propst Bros., Iowa City.

JUDGE..............................C C. ROUP, Iowa City, Iowa.

AWARDS.

Aged Boar—First, J. B. Mackoy, on Knoll Cecil, 16822.
Junior Yearling Boar—First, J. B. Mackoy, on Iowa King, 17477.
Senior Boar Pig—First, Propst Bros., on Hercules, 19193.
Junior Boar Pig—First, Propst Bros., on Chief of Knoll Slope, 19195.
Senior Sow Pig—First, Propst Bros., on Findella's Lady, 19190.
Junior Sow Pig—First, Propst Bros., on Loma VII, 19198.
Senior Champion Boar—J. B. Mackoy.
Junior Champion Boar—Propst Bros.
Junior Champion Sow—Propst Bros.
Grand Champion Boar—J. B Mackoy.
Grand Champion Sow—Propst Bros.
Young Herd, Owned by Exhibitor—First, Propst Bros.
Young Herd, Owned and Bred by Exhibitor—First, Propst Bros.

SPECIAL PRIZES OFFERED BY THE AMERICAN TAMWORTH SWINE RECORD ASSOCIATION.

Boar, Any Age—J. B. Mackoy.
Sow, Any Age—Propst Bros.

SHEEP DEPARTMENT

SUPERINTENDENT..........................CHAS. ESCHER, JR., Botna.

IOWA SWEEPSTAKES.

Best Ram, All Mutton Breeds—E. L. Bitterman, Mason City, on 391313.
Best Ewe, All Mutton Breeds—J. A. Taylor, Ames, on, 32756

MERINO, CLASS "B"

EXHIBITORS.

A. J. Blakely & Son, Grinnell; Joe W. Edgar, New London; A. L. Gamber, Shelbyville, Mo.; Watson Lovett, Zanesfield, Ohio; F. F. Warner & Sons, Bloomfield.

JUDGE...................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, Watson Lovett, on 86; second, A. L. Gamber, on Staley; third, A. J Blakely & Son, on S. Rail 173; fourth, A. J. Blakely & Son, on 2388.

Ram One Year Old and Under Two—First, Watson Lovett, on J. Lovett & Sons 274; second, A. L. Gamber; third, A. J. Blakely & Son, on 2450; fourth, A. J. Blakely & Son, on 2442.

Ram Under One Year—First, Watson Lovett, on 88; second, Watson Lovett, on 89; third, A. J. Blakely & Son, on 2519; fourth, A. J. Blakely & Son, on 2511.

Ewe Two Years Old or Over—First, Watson Lovett, on 80; second, A. L. Gamber; third, A. J. Blakely & Son, on 729; fourth, Watson Lovett, on 79.

Ewe One Year Old and Under Two—First, Watson Lovett, on 87; second, A L. Gamber; third, A. J. Blakely & Son, on 2458; fourth, A. J. Blakely & Son, on 2459.

Ewe Under One Year—First, Watson Lovett, on 92; second, Watson Lovett, on 93; third, A. L. Gamber; fourth, A. J. Blakely & Son, on 2577.

Champion Ram, Any Age—Watson Lovett, on 86.

Champion Ewe, Any Age—Watson Lovett, on 80.

Flock—First, Watson Lovett; second, A. L. Gamber; third, A. J. Blakely & Sons.

Get of Sire—First, Watson Lovett; second, A. J. Blakely & Son; third, F. F. Warner & Sons.

IOWA SPECIALS.

Ram Two Years Old or Over—First, A. J. Blakely & Son, on 2388.

Ram One Year Old and Under Two—First, A. J. Blakely & Son, on 2450; second, A. J. Blakely & Son, on 2442.

Ram Under One Year—First, A. J. Blakely & Son, on 2549; second, A. J. Blakely & Son, on 2550; third, F. F. Warner & Son

Ewe Two Years Old or Over—First, A. J. Blakely & Son, on 2351; second, A. J. Blakely & Son, on 2332.

Ewe One Year Old and Under Two—First, A. J. Blakely & Son, on 2458; second, A. J. Elakley & Son, on 2459.

Ewe Under One Year—First, A. J. Blakely & Son, on 2577; second, F. F. Warner & Sons; third, A. J. Blakely & Son, on 2576; fourth, F. F. Warner & Sons.

Champion Ram, Any Age—A. J. Blakely & Son, on 2388.

Champion Ewe, Any Age—A. J. Blakely & Son, on 2459.

Flock—First, A. J. Blakely & Son.

Get of Sire—First, A. J. Blakely & Son; second, A. J. Blakely & Son.

MERINO, CLASS "C."

EXHIBITORS.

A. J. Blakely & Son, Grinnell; Joe W. Edgar, New London; A. L. Gamber, Shelbyville, Mo; Watson Lovett, Zanesfield, Ohio; F. F. Warner & Sons, Bloomfield.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, Watson Lovett, on 3039; second, A. L. Gamber, on Cook; third, A. J. Blakely & Son, on 2339; fourth, Joe W. Edgar, on Rail & Son's 219.

Ram One Year Old and Under Two—First Watson Lovett, on N. G. William's 77; second, Watson Lovett, on 90; third, A. J. Blakely & Son, on 2449; fourth, A. J. Blakely & Son, on 2453.

Ram Under One Year—First, A J. Blakely & Son, on 2545; second, Watson Lovett, on 91; third, Watson Lovett; fourth, A. J. Blakely & Son, on 2550.

Ewe Two Years Old or Over—First, Watson Lovett, on 69; second, A. J. Blakely & Son, on 2141; third, A. J. Blakely & Son, on 2181; fourth, Watson Lovett.

Ewe One Year Old and Under Two—First Watson Lovett, on J. Lovett & Sons' 271; second, Watson Lovett, on 76; third, A. L. Gamber; fourth, A. J. Blakely & Son, on 2465.

Ewe Under One Year—First, Watson Lovett, on 94; second, Watson Lovett, on 95; third, A. J. Blakely & Son; fourth, A. J. Blakely & Son.

Champion Ram, Any Age—Watson Lovett, on 3039.

Champion Ewe, Any Age—Watson Lovett, on 69

Flock—First, Watson Lovett; second, A. L. Gamber; third, A. J. Blakely & Son.

Get of Sire—First, Watson Lovett; second, A. J. Blakely & Son; third, F. F. Warner & Sons.

IOWA SPECIALS.

Ram Two Years Old or Over—First, A. J. Blakely & Son.

Ram One Year Old and Under Two—First, A. J. Blakely & Son, on 2149; second, A. J. Blakely & Son, on 2453.

Ram Under One Year—First, A. J Blakely & Son, on 2550; second, F. F. Warner & Sons; third, Joe W. Edgar.

Ewe Two Years Old or Over—First, A. J. Blakely & Son, on 2181; second, A. J. Blakely & Son, on 2141; third, F. F. Warner & Sons, on 66908.

Ewe One Year Old and Under Two—First, A. J. Blakely & Son, on 2465; second, A. J. Blakely & Son, on 2461; third, F. F. Warner & Sons.

Ewe Under One Year—First, A. J. Blakely & Son, on 2580; second, A J. Blakely & Son, on 2578; third, F. F. Warner & Sons.

Champion Ram, Any Age—A. J. Blakely & Son, on 2149.

Champion Ewe, Any Age—A. J. Blakely & Son, on 2181.

Flock—First, A. J. Blakely & Son; second, F. F. Warner & Sons.

Get of Sire—First, A. J. Blakely & Son; second, F. F. Warner & Sons; third, Joe W. Edgar.

RAMBOUILLET.

EXHIBITORS.

F. S. King Bros. Co., Laramie, Wyo.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, F. S. King Bros. Co., on F. S. K. Co. 1763, 75661; second, F. S. King Bros. Co., on F. S K. Co. 1839, 81193.

Ram One Year Old and Under Two—First, F. S. King Bros. Co., on F. S. K. Co. 2359, 81204; second, F. S. King Bros. Co., on F. S. K. Co. 2471, 81189.

Ram Under One Year; First, F. S. King Bros. Co.; second F. S. King Bros. Co.

Ewe Two Years Old or Over—First F. S. King Bros. Co, on 78589; second, F. S. King Bros. Co., on 71351.

Ewe One Year Old and Under Two—First, F. S. King Bros. Co., on 81209; second, F. S. King Bros. Co., on 81212.

Ewe Under One Year—First, F. S. King Bros. Co; second, F. S. King Bros. Co.

Champion Ram, Any Age—F. S. King Bros. Co., on F. S. K. Co. 2359, 81204.

Champion Ewe, Any Age—F. S. King Bros. Co., on 78589.

Flock—First, F. S King Bros. Co.

Get of Sire—First, F. S. King Bros. Co.

COTSWOLD.

EXHIBITORS.

Alex W. Arnold, Galesville, Wis.; George Allen & Sons, Lexington, Nebr.; Joe W. Edgar, New London; W. A. Taylor & Son, Ames.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, Alex W. Arnold, on Willey's 10, 82998; second, W. A. Taylor & Son, on Maple Grove's 176, 74939; third, W. A. Taylor & Son; fourth, Joe W. Edgar, on Doty's 28, 80455.

Ram One Year Old and Under Two—First, George Allen & Sons, on Brassey, 83016; second, Alex W. Arnold, on 82001; third, W. A. Taylor & Son, on Maple Grove's 200, 80284; fourth, Joe W. Edgar, on 81220.

Ram Under One Year—First, Alex W. Arnold, on 83005; second, Alex W. Arnold, on 83007; third, W. A. Taylor & Son, on Maple Grove's 249; fourth, Joe W. Edgar, on 82932.

Ewe Two Years Old or Over—First, Alex W. Arnold, on 82994; second, Alex W. Arnold, on 77583; third, Joe W. Edgar, on 74351; fourth, Joe W. Edgar, on 79015.

Ewe One Year Old and Under Two—First, Alex. W. Arnold, on 82995; second, Alex W. Arnold, on 82996; third, W. A. Taylor & Son, on Maple Grove's 225, 80285; fourth, Joe W. Edgar, on 81221.

Ewe Under One Year—First, Alex W. Arnold, on 89992; second, Alex W. Arnold, on 82990; third W. A. Taylor & Son, on Maple Grove's 250; fourth, W. A. Taylor, on Maple Grove's 259.

Champion Ram, Any Age—Alex W. Arnold, on 82998

Champion Ewe, Any Age—Alex W. Arnold, on 82995.

Flock—First, Alex W. Arnold; second, W. A. Taylor & Son; third, Joe W. Edgar.

Get or Sire—First, Alex W. Arnold; second, Joe W. Edgar; third, W. A. Taylor & Son.

IOWA SPECIALS.

Ram Two Years Old or Over—First, Joe W. Edgar, on 74711.

Ram One Year Old and Under Two—First, Joe W. Edgar, on 81220; second, W. A. Taylor & Son, on Maple Grove's 200, 80284; third, Joe W. Edgar, on 81225.

Ram Under One Year—First, W. A. Taylor & Son, on Maple Grove's 249; second, Joe W. Edgar, on 82932; third, W. A. Taylor & Son, on Maple Grove's 260.

Ewe Two Years Old or Over—First, Joe W. Edgar, on 74351; second, Joe W. Edgar, on 79015; third, W. A. Taylor & Son, on Maple Grove's 177, 20286.

Ewe One Year Old and Under Two—First, W A. Taylor & Son, on Maple Grove's 225, 80285; second, J. W. Edgar, on 81221; third, J. W. Edgar, on 81222.

Ewe Under One Year—First, W. A. Taylor & Son, on Maple Grove's 250; second, W. A. Taylor, on Maple Grove's 259; third, Joe W. Edgar, on 82935.

Champion Ram, Any Age—Joe Edgar, on 74711.

Champion Ewe, Any Age—W. A. Taylor & Son, on Maple Grove's 225, 80285.

Flock—First, Joe W. Edgar; second, W. A. Taylor & Son.

Get of Sire—First, W. A Taylor & Son; second, Joe W. Edgar.

SPECIAL PRIZE OFFERED BY THE AMERICAN COTSWOLD REGISTRY ASSOCIATION.

Get of Sire, Bred by Iowa Exhibitor—First, W. A. Taylor & Son; second, Joe Edgar.

LINCOLN AND LEICESTER.

EXHIBITORS.

George Allen & Sons, Lexington, Nebr.; Alex W. Arnold, Galesville, Wis.; George A. Fraser, Lake Beulah, Wis.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, Alex W. Arnold, on 27814.

Ram One Year Old and Under Two—First, Alex W. Arnold, on 29728; second, George Allen & Sons, on Mowards, 29719.

Ram Under One Year—First, Alex W. Arnold, on 29814; second, Alex W. Arnold, on 29815.

Ewe Two Years Old or Over—First, Alex W. Arnold, on 25341; second, Alex W. Arnold, on 25342.

Ewe One Year Old and Under Two—First, Alex W. Arnold, on 27721.

Ewe Under One Year—First, Alex W. Arnold, on 29816; second, Alex W Arnold, on 29817.

Champion Ram, Any Age—Alex W. Arnold, on 29728.

Champion Ewe, any Age—Alex W. Arnold, on 25341.

Flock—First, Alex W. Arnold.

Get of Sire—First, Alex W. Arnold.

HAMPSHIRE DOWN.

EXHIBITORS.

Geo. Allen & Sons, Lexington, Nebr.; Alex W. Arnold, Galesville, Wis.; E L. Bitterman, Mason City; John Graham & Son, Eldora; Sherwood Bros., Shelbyville, Mo.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, Sherwood Bros., on 15734; second, Sherwood Bros.; third, John Graham & Son, on 15483; fourth, John Graham & Son, on Cooper's 80, 15885.

Ram One Year Old and Under Two—First, Alex W. Arnold, on 16928; second, E. L. Bitterman, on 18468; third, Sherwood Bros., on 17230; fourth, John Graham & Son, on 17409.

Ram Under One Year—First, George Allen & Sons, on Dean's Premier, 18980; second, Alex W. Arnold, on 18978; third, Sherwood Bros., on 18795; fourth, Alex W. Arnold.

Ewe Two Years Old or Over—First, Alex W. Arnold, on 37986; second, Alex W. Arnold, on 37982; third, Sherwood Bros.; fourth, Sherwood Bros.

Ewe One Year Old and Under Two—First, Alex W. Arno'd; second, Sherwood Bros., on 41879; third, Alex W. Arnold; fourth, Sherwood Bros .

Ewe Under One Year—First, Alex W. Arnold, on 46476; second, Alex W. Arnold, on 46472; third, Sherwood Bros., on 46321; fourth, John Graham & Son, on 41971.

Champion Ram, Any Age—George Allen & Sons, on Dean's Premier, 18980.

Champion Ewe, Any Age—Alex W. Arnold, on 37986.

Flock—First, Alex W. Arnold; second, Sherwood Bros.; third, E. L. Bitterman; fourth, John Graham & Son.

Get of Sire—First, Alex W. Arnold; second, Sherwood Bros.; third, John Graham & Son; fourth, E. L Bitterman.

SHROPSHIRE.

EXHIBITORS.

George Allen & Sons, Lexington, Nebr.; Alex W. Arnold, Galesville, Wis.; E. L. Bitterman, Mason City; C. W. Chandler, Kellerton; C. C. Croxen, Atalissa; H. D. Eddingfield, Mt. Pleasant; J. S. Fawcett & Son, Springdale; A. T. Jones & Sons, Everly; George W. McKerrow & Sons; Lawrence C. Peters, West Liberty; J. A Taylor, Ames; W. A. Taylor & Sons, Ames.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, C. W. Chandler, on Robinson, 341276; second, E. L. Bitterman, on The Decision, 391313; third, A. T. Jones & Sons, on McKerrows 2975, 392863; fourth, E. L. Bitterman, on Choice, 391312.

Ram One Year Old and Under Two—First, George Allen & Sons, on Simon, 122440; second, H. D. Eddingfield, on Eddingfield, 106831; third, J. S. Fawcett & Son, on Fawcett's 372, 122205; fourth, A. T. Jones & Sons, on Bibby's 391.

Ram Under One Year—First, J. S. Fawcett & Son, on Fawcetts' Disturber, 422193; second, H. D. Eddingfield, on Valley Home Westminster; third, E. L. Bitterman, on Minton, Jr., 422046; fourth, J. S. Fawcett & Son, on Springdale Masterpiece, 422195.

Ewe Two Years Old or Over—First, A. T. Jones & Sons, on Imp. Bibby ewe; second, A. T. Jones & Sons, on T. F. Jones' 222, 406484; third, H .D. Eddingfield, on Eddingfield 73, 380811; fourth, H D. Eddingfield, on Cooper, 393157.

Ewe One Year Old and Under Two—First, H. D. Eddingfield, on 422448; second, George Allen & Sons, on Minton, 422449; third, W. A. Taylor & Son, on Maple Grove's 208, 406022; fourth, A. T. Jones & Sons, on McKerrow's 3338.

Ewe Under One Year—First, E. L. Bitterman, on East View's Lottie, 422051; second, Alex W. Arnold; third, A. T. Jones & Sons, on W. B. 18; fourth, E. L. Bitterman, on East View's Sweetness, 422053.

Champion Ram, Any Age—C. W. Chandler, on Robinson, 341276

Champion Ewe, any Age—H. D. Eddingfield, on 422448.

Flock—First, E. L. Bitterman & Son; second, A. T. Jones & Sons; third, H. D. Eddingfield; fourth, A. T. Jones & Sons.

Get of Sire—First, E. L. Bitterman; second, J. S. Fawcett & Son; third, H. D. Eddingveld; fourth, A. T. Jones & Sons.

IOWA SPECIALS.

Ram Two Years Old or Over—First, E. L. Bitterman, on The Decision, 391313; second E. L. Bitterman, on Choice, 391312; third. J. A. Taylor, on 399988; fourth, C. W. Chandler, on 385101; fifth, W. A. Taylor, on Maple Grove's 160, 376831.

Ram One Year Old and Under Two—First, H. D. Eddingfield, on Eddingfield 198, 406831; second, J. S. Fawcett & Son, on Fawcetts 372, 422205; third, J. S. Fawcett, on Fawcetts 359, 406893; fourth, E. L. Bitterman, on East View's Reo, 405923; fifth, J. A. Taylor, on 420491.

Ram Under One Year—First, E. L. Bitterman, on Minton, Jr., 422046; second, J. S. Fawcett & Son, on Springdale Masterpiece, 422195; third, J. A. Taylor, on 422109; fourth, E. L. Bitterman, on Minton 2d, 422050; fifth, A. T. Jones, on 423819.

Ewe Two Years Old or Over—First, A. T. Jones & Sons, on Jones 222, 406484; second, H. D. Eddingfield, on Eddingfield 73, 380811; third, E. L. Bitterman, on East View's 722, 405929; fourth, C. W. Chandler, on 363977; fifth, C. W. Chandler, on 307412.

Ewe One Year Old and Under Two—First, W. A. Taylor & Son, on Maple Grove's 208, 406022; second, E. L. Bitterman, on East View's Daisy B., 422043; third, E. L. Bitterman, on East View's 801, 422042; fourth, J. A. Taylor, on 420489; fifth, A. T. Jones, on Jones' 280, 423820.

Ewe Under One Year—First, E. L. Bitterman, on East View's Sweetness, 422053; second, H. D. Eddingfield, on Valley Home Mischief, 423727; third, J. S. Fawcett & Son, on Fawcett's Pride, 422197; fourth, H. D. Eddingfield, on Valley Home Minnie, 423727; fifth, E. L. Bitterman, on East View's May B., 422056.

Champion Ram, Any Age—E. L. Bitterman, on The Decisoin, 391313.

Champion Ewe, Any Age—A. T. Jones, on Jones' 222, 406484.

Flock—First, E. L. Bitterman; second, W. A. Taylor & Son; third, J. S. Fawcett & Son; fourth, H. D. Eddingfield; fifth, J. A. Taylor.

Get of Sire—First, J. S. Fawcett & Son; second, A. T. Jones & Sons; third, H. D. Eddingfield; fourth, W. A. Taylor & Son; fifth, J. A. Taylor.

SPECIAL PREMIUM OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

Ram Two Years Old or Over—First, E. L. Bitterman, on The Decision, 391313; second, E. L. Bitterman, on Choice, 391312; third, W. A. Taylor, on Eddingfield 129, 376192; fourth, J. A. Taylor ,on 399988.

Ram, One Year Old and Under Two—First, H. D. Eddingfield, on Eddingfield's 198, 406831; second, J. S. Fawcett & Son, on Fawcett's 372, 422205; third, J. S. Fawcett & Son, on Fawcett's 359, 406893; fourth, E. L. Bitterman, on East View Reo, 405923.

Ram Lamb—First, J. S. Fawcett & Son, on Fawcett's Disturber, 422193; second, E. L. Bitterman, on Minton, Jr., 422046; third, J. S Fawcett & Son, on Springdale Masterpiece, 422195; fourth, J. A. Taylor, on 422109.

Ewe One Year Old and Under Two—First, W. A. Taylor & Son, on Maple Grove 208, 406022; second, E. L. Bitterman, on East View Daisy B., 422043; third, E. L. Bitterman, on East View 801, 422042; fourth, J. A. Taylor, on Taylor's 254, 420489.

Ewe Lamb—First, E. L. Bitterman, on East View Lotttie, 422051; second, E L. Bitterman, on East View Sweetness, 422053; third, H.. D. Eddingfield, on Valley Home Mischief, 423727; fourth, J. S. Fawcett & Son, on Fawcett's Pride, 422197.

Champion Ram, Any Age—E. L. Bitterman, on The Decision, 391313.

Champion Ewe, Any Age—E. L. Bitterman, on East View's Lottie, 422051.

Pen, Four Lambs—First, E. L. Bitterman; second, J. S. Fawcett & Son; third, A. T. Jones & Sons; fourth, H. D. Eddingfield.

Pen, Three Yearling Lambs—First, E. L. Bitterman; second, J. S. Fawcett & Son; third, J. A. Taylor.

Pen, Five Yearling Rams—First, J. A. Taylor; second, C. E. Chandler; third, J. S. Fawcett & Son.

OXFORD DOWNS.

EXHIBITORS.

J. L. Baldwin, Osceola; C. C. Croxen, Atalissa; third, John Graham & Son, Eldora; George McKerrow & Sons, Pewaukee, Wis.; F. H. Osen, Atlantic

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, George McKerrow & Sons, on 68165; second, C. C. Croxen; third, John Graham & Son, on 68263; fourth, John Graham & Son, on 68271.

Ram One Year Old and Under Two—First, John Graham & Son, on 71467, second, C. C. Croxen; third, George McKerrow & Sons; fourth, C. C. Croxen.

Ram Under One Year—First, John Graham & Son, on 75304; second, C. C. Croxen; third, John Graham & Son, on 75303; fourth, F. H. Osen.

Ewe Two Years Old or Over—First, C. C. Croxen; second, C. C. Croxen; third, John Graham & Son, on 58371; fourth, John Graham & Son, on 65011

Ewe One Year Old and Under Two—First, George McKerrow & Sons; second, C. C. Croxen; third, John Graham & Son, on 75301; fourth, John Graham & Son, on 71476.

Ewe Under One Year—First, John Graham & Son, on 75306; second, C. C. Croxen; third, John Graham & Son, on 75305; fourth, George McKerrow & Sons.

Champion Ram, Any Age—First, George McKerrow & Son., on 68165.

Champion Ewe, Any Age—C. C. Croxen.

Flock—First, C. C. Croxen; second, John Graham & Son; third, George McKerrow & Son; fourth, F. H. Osen.

Get of Sire—First, John Graham & Son; second, C. C. Croxen; third, F. H. Osen.

IOWA SPECIALS

Ram Two Years Old or Over—First, John Graham & Son; second, F. H Osen, on 65908; third, F. H. Osen, on 68314; fourth, C. C. Croxen.

Ram One Year Old and Under Two—First, C. C. Croxen; second, John Graham & Son; third, C. C. Croxen; fourth, John Graham & Son.

Ram Under One Year—First, C. C. Croxen; second, John Graham & Son; third, John Graham & Son; fourth, F. H. Osen.

Ewe Two Years Old or Over—First, C. C. Croxen; second, John Graham & Son; third, John Graham & Son; fourth, C. C Croxen.

Ewe One Year Old and Under Two—First, C. C. Croxen; second, John Graham & Son; third, John Graham & Son; fourth, C. C. Croxen.

Ewe Under One Year—First, C. C. Croxen; second, John Graham & Son; third, C. C. Croxen; fourth, F. H. Osen.

Champion Ram, Any Age—John Graham & Son, on 75304.

Champion Ewe, Any Age—C. C Croxen.

Flock—First, John Graham & Son; second, C. C. Croxen; third, F. H. Osen.

Get of Sire—First, C. C. Croxen; second, John Graham & Son; third, F. H. Osen.

SPECIAL PRIZE OFFERED BY THE AMERICAN OXFORD DOWN RECORD ASSOCIATION.

Best Yearling Ram—First, John Graham & Son, on 71467; second, C. C. Croxen, on 71400.

Best Yearling Ewe—First, C. C. Croxen, on 71399; second, John Graham & Son, on 75301

Get of Sire—First, John Graham & Son; second, C. C. Croxen.

SOUTHDOWN.

EXHIBITORS.

Alex W. Arnold, Galesville, Wis.; E. L. Bitterman, Mason City; H. & G Croft, Bluff City, Kan.; George A. Fraser, Lake Beulah, Wis.; Watson Lovett Zanesfield, Ohio; Sherwood Bros., Shelbyville, Mo.; J. A. Tayior, Ames.

JUDGE....................PROF. F. R. MARSHALL, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, J. A. Taylor, on Goodword 412, 31634; second, Watson Lovett, on 31774; third, Alex W. Arnold, on 29059; fourth, J. A. Taylor, on Baker 61, 31611.

Ram One Year Old and Under Two—First, J. A. Taylor, on 32754; second, Alex W. Arnold, on 33308; third, Sherwood Bros, on 33966; fourth, J. A. Taylor, on J. S. C. 318, 33011.

Ram Under One Year—First, E. L. Bitterman, on 33926; second, E. L. Bitterman, on Fantz, 33924; third, J. A. Taylor, on 33936; fourth, Sherwood Bros., on 33968.

Ewe Two Years Old or Over—First, E. L. Bitterman, on Fantz's ewe, 31008; second, Alex W. Arnold, on 30319; third, Sherwood Bros., on 32022; fourth, E. L. Bitterman, on Lady 30269.

Ewe One Year Old and Under Two—First, J. A. Taylor, on 32756; second, Alex W. Arnold, on 33322; third, Sherwood Bros., on 32767; fourth, J. A. Taylor, on 32755.

Ewe Under One Year—First, Alex W. Arnold, on 34313; second, J. A. Taylor, on 33937; third, E. L. Bitterman, on Fantz's ewe, 33927; fourth, Sherwood Bros., on 33970.

Champion Ram, Any Age—J. A. Taylor, on 31634.

Champion Ewe, Any Age—E. L. Bitterman, on 31008.

Flock—J. A. Taylor; second, Alex W. Arnold; third, E. L. Bitterman; fourth, Sherwood Bros.

Get of Sire—First, E. L. Bitterman; second, Alex W. Arnold; third, Sherwood Bros.

DORSET.

EXHIBITORS.

C. G. Cherry, Xenia, Ohio; H. H. Cherry, Xenia, Ohio; Sherwood Bros., Shelbyville, Mo.

Judge....................Prof. F. R. Marshall, Washington, D. C.

Ram Two Years Old or Over—First, H. H. Cherry, on C. D. L., 15881.

Ram One Year Old and Under Two—First, H. H. Cherry, on C. D. L., 17522; second, H. H. Cherry, on C. D. L., 17551.

Ram Under One Year—First, H. H. Cherry, on 290; second, H. H. Cherry, on 291; third, Sherwood Bros., on 17701.

Ewe Two Years Old or Over—First, H. H. Cherry, on C. D. L., 13399; second, H. H. Cherry, on C. D. L., 15556;. third, Sherwood Bros., on 18787.

Ewe One Year Old and Under Two—First, H. H Cherry, on C. D. L., 17548; second, H. H. Cherry, on C. D. L., 17524; third, Sherwood Bros.

Ewe Under One Year—First, H. H. Cherry, on 284; second, H. H. Cherry, on 275; third, Sherwood Bros.

Champion Ram, Any Age—H. H. Cherry.

Champion Ewe, Any Age—H. H. Cherry.

Flock—First, H H. Cherry; second, Sherwood Bros.

Get of Sire—First, H. H. Cherry; second, Sherwood Bros.

CHEVIOT.

EXHIBITORS.

Alex W. Arnold, Galesville, Wis.; H. D. Eddingfield, Mt. Pleasant; Watson Lovett, Zanesfield, Ohio; Wayne C. Postle, Camp Chase, Ohio; J. A. Taylor, Ames; W. A. Taylor & Son, Ames.

Judge....................Prof. F. R. Marshall, Washington, D. C.

AWARDS.

Ram Two Years Old or Over—First, Wayne C. Postle, on 8446; second, Alex W. Arnold, on 7078; third, Wayne C. Postle, on 9860.

Ram One Year Old and Under Two—First, Wayne C. Postle, on 8894; second, Wayne C. Postle, on 9118; third, H. D. Eddingfield.

Ram Under One Year—First, W. A. Taylor & Son, on Maple Grove's 252; second, Wayne C. Postle, on 9339; third, Wayne C. Postle, on 9337.

Ewe Two Years Old or Over—First, Wayne C. Postle, on 8445; second, Alex W. Arnold, on 7477; Wayne C. Postle, on 7482.

Ewe One Year Old and Under Two—First, Wayne C Postle, on 8896; second, Alex W. Arnold, on 8975; third, W. A. Taylor & Son, on Lady Illington 468, 8927; fourth, Wayne C. Postle, on 8897.

Ewe Under One Year—First, W. A. Taylor & Son, on Maple Grove's 254; second, Wayne C. Postle, on 9346; third, Alex W. Arnold.

Champion Ram, Any Age—Wayne C. Postle, on 8446.

Champion Ewe, Any Age—Wayne C. Postle, on 8896.

Flock—First, Wayne C. Postle; second, Alex W. Arnold; third, W. A. Taylor & Son

Get of Sire—First, Wayne C. Postle; second, Alex W. Arnold; third, Watson Lovett.

ANGORA GOATS.

EXHIBITORS.

H. C. Davis, Ames; J. A. Taylor, Ames.

JUDGE.................... PROF. F. R. MARSHALL, Washington, D. C.

AWARDS

Buck Two Years Old or Over—First, H. C. Davis; second, H. C. Davis.

Buck One Year Old or Over—First, H. C. Davis; second, H. C. Davis.

Buck Kid—First, H. C. Davis; second, H. C. Davis.

Doe Two Years Old or Over—First, H. C. Davis; second, H. C. Davis.

Doe One Year Old—First, J. A. Taylor; second, H. C. Davis; third, J. C. Taylor.

Doe Kid—First, H. C. Davis; second, H. C. Davis.

Flock—First, H. C. Davis.

Champion Buck, Any Age—H. C. Davis.

Champion Doe, Any Age—J. A. Taylor.

WOOL EXHIBIT.

EXHIBITORS.

C. C. Croxen, Atalissa; H. D. Eddingfield, Mt. Pleasant; Arthur Leonard, Corning; F. H. Osen, Atlantic; Harry Russell, Bloomfield; W. A. Taylor & Son, Ames; F. F. Warner & Sons; V. G. Warner.

JUDGE.................... PROF. F. R. MARSHALL, Washington, D. C.

AWARDS

Long Fleece Wool—First, W. A. Taylor & Son; second, W. A. Taylor & Son; third, W. A. Taylor & Son.

Medium Wool—First, Arthur Leonard; second, F. H. Osen; third, H. D Eddingfield; fourth, W. A. Taylor & Son; fifth, H. D. Eddingfield.

Fine Wool—F. F. Warner & Sons; second, V. G. Warner; third, F. F. Warner & Sons; fourth, Harry Russell; fifth, Harry Russell.

Sweepstakes—F. F. Warner & Sons.

SHEEP SHEARING CONTEST.

EXHIBITORS.

James Baber, Des Moines; C. E. Bensen, Sheldon; John Graham & Sons, Eldora; F. H. Osen, Atlantic; Fred Peasley, Indianola; Harold Peasley, Indianola; E. C. Pyles, Union; John Sentance, DeWitt; B. F. Stewart, Davenport; C. A. Taylor, Ames; Malcolm Trout, Birmingham.

JUDGE.................... PROF. F. R. MARSHALL, Washington, D. C.

AWARDS

Shearing With Power Machine by Professionals—First, Harold Peasley; second, Fred Peasley.

Shearing With Hand Shears by Professionals—First, James Baber; second, E. C. Pyles; third, John Sentance; fourth, F. H. Osen.

Shearing With Power Machine by Amateurs—First, John Graham & Son; second, Malcolm Trout.

Shearing With Hand Shears by Amateurs—First, John Graham & Son; second, B. J. Stewart; third, C. A. Taylor; fourth, Malcolm Trout.

POULTRY DEPARTMENT.

SUPERINTENDENT...Mt. Pleasant.

JUDGES..................................

F. H. SHELLABARGER West Liberty, Iowa
JOSEPH DAGLE, Richland, Iowa
GLEN F. RICHARDS, LeGrand, Iowa
M. H. BUCK Prairie City, Iowa

AMERICAN.

EXHIBITORS.

A. L. Anderson, Indianola; J. C. Ash, Norwalk; W. H. Barnes, Red Oak; L. C. Barnett, Indianola; Mrs. W. S. Beatty, Des Moines; O. C. Bierma, Mitchellville; M. H. Buck, Prairie City; Carpenter & Anderson, Indianola; Cloverdale Poultry Yards, Omaha, Neb.; Michael Coffee, Omaha, Neb.; Co-operative Poultry Farms, Newton; Crescent Poultry Farms, Des Moines; E. W. Ekey, Des Moines; George W. Garvin, Mt. Pleasant; George W. Garvin & Son, Mt. Pleasant; A. D. Gibson, Altoona; Claus Gode, Williamsburg; Mrs. George Grayson, Des Moines; T. H. Hall, Des Moines; Hall & Price, Des Moines; Hanson's Poultry Farm, Dean; Frank Harris, Des Moines; J. L. Hastings, Grinnell; H. J. Hemmerling, Waterloo; H. V. Hethershaw, Des Moines; Walter Hobbs, Kearney, Neb.; Howard T. Hovde, Des Moines; Peter Hove, Stanhope; F. T. Howlett; W. C. Jacob, Knoxville; Arthur Johnson, Scranton; Kellogg & Kellogg, Cambridge, Ill.; Chas. Kirchner, Nichols; Karl Koenigsberger, Des Moines; Laufer Bros., Millbrook, Ill.; G. H. Long, DeSoto; N. C. Lusk, Des Moines; J. P. McLaughlin, Des Moines; Wm. McMichael, Des Moines; Walt B. Mahaffa, Des Moines; Beatrice Mansfield, Altoona; J. A. Mason, Carlisle; F. W. Mason, Des Moines; Thos. L. Morlan, Indianola; L. F. Olson, Des Moines; Russell F. Palmer, Kearney, Neb.; John Peterson, Randall; A. B. Porter, Mt. Pleasant; C. D. Porter, Altoona; S. A. Power & Son, Fairfield; Redbird Farms, Des Moines; F. L. Reinhard & Son, Ottumwa; Floyd Russell, Kearney, Neb.; C. H. Schroeder, Des Moines; Howard Shaul, Williamsburg; Sheffield Farm, Glendale, Ohio; Julius Sinn, Williamsburg; Mrs. Wm. Stoll, LeMars; R. G. Stocker, Traer; Dwight Swan, Kearney, Neb.; Edward Swan, Kearney, Neb.; The 1733 Ranch, Kearney, Neb.; Taylor Bros., Cambridge, Ill.; Dana Wagner, Des Moines; V. G. Warner, Bloomfield; C. A. Wiggins, Prairie City; Ray Williams, Hampton; C. D. Warren, Altoona.

AWARDS.

Sweepstakes, Cockerel—(109), Sheffield Farms.

Pullett—(38), N. C. Lusk.

Flock—First (11-12-13-14-15-16-17-19-20-8436), H. J. Hemmerling; second, (6440659-677-619-633-636-130-611-615-622-631), Beatrice Mansfield; third, (17-18-19-20-21-22-23-24-25-26-27), V. G. Warner.

Barred Plymouth Rock Cock, Cockerel Bred—First, 22), Carpenter & Anderson; second, (16), M. H. Buck; third, (4), Mrs. Wm. Stoll.

Barred Plymouth Rock Cockerel, Cockerel Bred—First, (169), A. B. Porter; second, (142), C. A. Wiggins; third, (200), Crescent Poultry Farms.

Barred Plymouth Rock Hen, Cockerel Bred—First, (196), Crescent Poultry Farms; second, (174), Carpenter & Anderson; third, (331), F. L. Reinhard & Son.

Barred Plymouth Rock Pullet, Cockerel Bred—First, (5), C. A. Wiggins; second, (8), C. A. Wiggins; third, (381), Laufer Bros.

Barred Plymouth Rock Exhibition Pen, Fowls, Cockerel Bred—First, (167-158-25-170-168), Carpenter & Anderson; second, Crescent Poultry Farms; third, (22-35-36-37-38), J. F. Harsh.

Barred Plymouth Rock Exhibition Pen, Chicks, Cockerel Bred—First, (18-49-9-93-34), C. A. Wiggins; second, (56-58-61-62-64), Carpenter & Anderson; third, Crescent Poultry Farms.

Barred Plymouth Rock Cock, Pullet Bred--First, 58), H. V. Hethershaw; second, (47), M. H. Buck; third, (67), H. V. Hethershaw.

Barred Plymouth Rock Cockerel, Pullet Bred--First, (939), John Peterson; second, (940), John Peterson; third, (937), John Peterson.

Barred Plymouth Rock Hen, Pullet Bred—First, F. L. Reinhard & Son; second, (2), M. H. Buck; third, (50-61), Crescent Poultry Farms.

Barred Plymouth Rock Pullet, Pullet Bred—First, (203), John Peterson; second, (374), Laufer Bros.; third, (202), John Peterson.

Barred Plymouth Rock Exhibition Pen, Fowls, Pullet Bred—First, (834-181-172), A. B. Porter; second, (8851-8885-8872-8882-8866), Floyd Russell; third, (25-42-43-44-45), J. F. Harsh.

Barred Plymouth Rock Exhibition Pen, Chicks, Pullet Bred—First, (359-344-353-357-367), Laufer Bros.; second, Crescent Poultry Farms; third, (46-47-48-49-50), J. F. Harsh.

White Plymouth Rock Cock—First, (48), N. C. Lusk; second, (20), Taylor Bros.; third, Crescent Poultry Farms.

White Plymouth Rock Cockerel—First, (40), N. C. Lusk; second, (10228), Walter Hobbs; third, (37), N. C. Lusk.

White Plymouth Rock Hen—First, (22), Taylor Bros.; second, (10816), Walter Hobbs; third, Crescent Poultry Farms.

White Plymouth Rock Pullet—First, (38), N. C. Lusk; second, (23), Taylor Bros.; third, (34), N. C. Lusk.

White Plymouth Rock, Exhibition Pen, Fowls—First, Crescent Poultry Farms second, (K2187-K2191-K2502-C86845), Geo. W. Garvin & Son.

White Plymouth Rock Exhibition Pen, Chicks—First, (10801-10849-10841-10835-10829), Walter Hobbs; second, (10839-10830-10804-10840-10832), Walter Hobbs.

Buff Plymouth Rock Cock—First, Hanson's Poultry Farm; second, (1096), T. H. Hall; third, (20), Kellog & Kellog.

Buff Plymouth Rock Cockerel—First, (37), Peter Hove; second, (65), How-Howard T. Hovde.. third, (27), Kellog & Kellog.

Buff Plymouth Rock Hen—First, (37), Peter Hove; second, Crescent Poultry Farms; third, (1044), T. H. Hall.

Buff Plymouth Rock Pullet—First, (41), Peter Hove; second, (61), Howard T. Hovde; third, (2), Kellog & Kellog.

Buff Plymouth Rock Exhibition Pen, Fowls—First, (25-21-27-28-51), Peter Hove.

Buff Plymouth Rock Exhibition Pen, Chicks—First, (44-41-27-25-31), Peter Hove.

Partridge Plymouth Rock Cock—First, (24), Taylor Bros.; second, Crescent Poultry Farms; third, C. D. Warren.

Partridge Plymouth Rock Cockerel—First, (25), Taylor Bros.; second, (18), Kellog & Kellog; third, Crescent Poultry Farms.

Partridge Plymouth Rock Hen—First, (28), Crescent Poultry Farms; second, (26), Taylor Bros.; third, Hanson's Poultry Farm.

Partridge 'Plymouth Rock Pullet—First, (17), Kellog & Kellog; second, (6), Kellog & Kellog; third, (27), Taylor Bros.

Partridge Plymouth Rock Exhibition Pen, Fowls—First, Crescent Poultry Farms.

Silver Wyandotte Cock—First, (1), V. G. Warner; second, (40), Chas. Kirchner; third, (49), A. L. Anderson.

Silver Wyandotte Cockerel—First, (95), C. D. Porter; second, (2), V. G. Warner; third, (153), A. L. Anderson.

Silver Wyandotte Hen—First, (4), V. G. Warner; second, (5), V. G. Warner; third, (166), A. L. Anderson.

Silver Wyandotte Pullet—First, (85), A. L. Anderson; second, (92), A. L. Anderson; third, (6), V. G. Warner.

Silver Wyandotte Exhibition Pen, Fowls—First, (154-157-169-159-155), A. L. Anderson; second, (7-8-9-10-11), V. G. Warner.

Silver Wyandotte Exhibition Pen, Chicks—First, (12-13-14-15-16), V. G. Warner; second, (66-161-54-57-59), A. L. Anderson.

Golden Wyandotte Cock—First, (2), A. L. Anderson; second, (28), V. G. Warner; third, (11), Julius Sinn.

Golden Wyandotte Cockerel—First, (140), A. L. Anderson; second, (29). V. G. Warner; third, (13), Julius Sinn.

Golden Wyandotte Hen—First, (12), Julius Sinn; second, (20), V. G. Warner; third, (156), A. L. Anderson.

Golden Wyandotte Pullet—First, (14), Julius Sinn; second, (31), V. G. Warner; third, (89), A. L. Anderson.

Golden Wyandotte Exhibition Pen, Fowls—First, (6-7-8-9-10), Julius Sinn; second, (32-33-34-35-36), V. G. Warner; third, (136-134-141-152-138), A. L. Anderson.

Golden Wyandotte Exhibition Pen, Chicks—First, (6-7-8-9-10), Julius Sinn; second, (75-87-69-65-73), A. L. Anderson.

White Wyandotte Cock—First, (106), Beatrice Mansfield; second, (1), Frank Harris; third, (46), L. F. Olson.

White Wyandotte Cockerel—First, (117), Beatrice Mansfield; second, (15), Frank Harris; third, (152), Crescent Poultry Farms .

White Wyandotte Hen—First, (678), Beatrice Mansfieled; second, (11), Frank Harris; third, (34), F. L. Olson.

White Wyandotte Pullet—First, (641), Beatrice Mansfield; second, (13), Frank Harris; third, (12), Frank Harris.

White Wyandotte Exhibition Pen, Fowls—First, (607-120-601-602-603), Beatrice Mansfield; second, (8618-8648-8650-8633-8634), Dwight Swan; third, (8620-8637-8616-8604-8630), Dwight Swan.

White Wyandotte Exhibition Pen, Chicks—First, (653-655-121-651-652), Beatrice Mansfield; second, (669-122-660-661-663), Beatrice Mansfield; third, 8615-8635-8627-8621-8646), Dwight Swan.

Buff Wyandotte Cock—First, (28), S. A. Power & Son; second, (37), V. G. Warner.

Buff Wyandotte Cockerel—First, (3), Thos. L. Morlan; second, Crescent Poultry Farms.

Buff Wyandotte Hen—First, (13), Thos. L. Morlan; second, (7), S. A. Power & Son; third, (38), V. G. Warner.

Buff Wyandotte Pullet—First, (52), Thos. L. Morlan; second, (39), V. G. Warner.

Buff Wyandotte Exhibition Pen, Fowls—First, S. A. Power; second, (4-81-2-12-11), Thos. L. Morland; third, Crescent Poultry Farms.

Buff Wyandotte Exhibition Pen, Chicks—First, (58-63-64-72-60), Thos. L. Morlan.

Black Wyandotte Cock—First, (176), Crescent Poultry Farms.

Black Wyandotte Cockerel—First, (188), Crescent Poultry Farms.

Black Wyandotte Hen—First, (183), Crescent Poultry Farms.

Black Wyandotte Pullet—First, (176), Crescent Poultry Farms.

Partridge Wyandotte Cock—First, (102), Sheffield Farm; second, (103), Sheffield Farm; third, (101), Sheffield Farm.

Partridge Wyandotte Cockerel—First, (109), Sheffield Farm; second, (108), Sheffield Farm; third, (107), Sheffield Farm.

Partridge Wyandotte Hen—First, (7), J. P. McLaughlin; second, (108), Crescent Poultry Farms; third, (106), Sheffield Farm.

Partridge Wyandotte Pullet—First, (112), Sheffield Farm; second, (110), Sheffield Farm; third, (111), Sheffield Farm.

Partridge Wyandotte Exhibition Pen, Fowls—First, Sheffield Farm; second, Sheffield Farm; third, .Crescent Poultry Farms.

Partridge Wyandotte Exhibition Pen, Chicks—First, Sheffield Farm; second, Sheffield Farm.

Silver Penciled Wyandotte Cock—First, (11), V. G. Warner; second, Hanson's Poultry Farm.

Silver Penciled Wyandotte Cockerel—First, (47), V. G. Warner; second, (46), V. G. Warner; third, (45), V. G. Warner.

Silver Penciled Wyandotte Hen—First, (50), V. G. Warner; second, (49), V. G. Warner; third, (48), V. G. Warner.

Silver Penciled Wyandotte Pullet—First, (53), V. G. Warner; second, (52), V. G. Warner; third, (51), V. G. Warner.

Columbian Wyandotte Cock—First, (21), Claus Gode; second, (109), Crescent Poultry Farms; third, (12), Thos. L. Morlan.

Columbian Wyandotte Cockerel—First, (23), Claus Gode.

Columbian Wyandotte Hen—First, (22), Claus Gode; second, (6), E. W. Eckey; third, (43), Thos. L. Morlan.

Columbian Wyandotte Pullet—First, (24), Claus Gode; second, (3), Mrs. W. S. Beatty; third, (2), Mrs. W. S. Beatty.

Columbian Wyandotte Exhibition Pen, Fowls—First, Crescent Poultry Farms.

Columbian Wyandotte Exhibition Pen, Chicks—First, Claus Gode.

Black Java Cockerel—First, (194), Crescent Poultry Farms.

Black Java Hen—First, (151), Crescent Poultry Farms; second, (181), Crescent Poultry Farms.

Black Java Pullet—First, (191), Crescent Poultry Farms.

Mottled Java Cock—First, (190), Crescent Poultry Farm.

Mottled Java Cockerel—First, (197), Crescent Poultry Farms.

Mottled Java Hen—First, (196), Crescent Poultry Farms; second, (181), Crescent Poultry Farms; third, (185), Crescent Poultry Farms

Rose Comb Dominique Cock—First, (7275), Crescent Poultry Farms.

Rose Comb Dominique Cockerel—First, (102), Crescent Poultry Farms; second, (44), M. H. Buck.

Rose Comb Dominique Hen—First, (182), Crescent Poultry Farms; second, (77), M. H. Buck; third, (7184), Crescent Poultry Farms.

Rose Comb Dominique Pullet—First, (118), Crescent Poultry Farms; second, (79), M. H. Buck.

Single Comb Rhode Island Red Cock—First, (56), Howard Shaul; second (A22902), H. J. Hemmerling; third, (90), Hall & Price.

Single Comb Rhode Island Red Cockerel—First, (11), Dana Wagner; second, (101), Crescent Poultry Farms; third, (95), Hall & Price.

Single Comb Rhode Island Red Hen—First, (585), F. L. Reinhard & Son; second, (39), Russell F. Palmer; third, (24), Ray Williams.

Single Comb Rhode Island Red Pullet—First, (8841), Russell F. Palmer; second, (97), Hall & Price; third, (7), Howard Shaul.

Single Comb Rhode Island Red Exhibition Pen, Fowls—First, (8833-43-66-95-44), Russell F. Palmer; second, (11-1-4-5-6), R. G. Stocker; third, (7-8-9-10-11), J. C. Ash.

Single Comb Rhode Island Red Exhibition Pen, Chicks—First, (8804-92-87-8827-8831), Russell F. Palmer; second, (18-19-20-21-22), Walt B. Mahaffa; third, (8843-13-34-8845-8801), Russell F. Palmer.

Rose Cimb Rhode Island Red Cock—First, (40), Michael Coffey; second, (8861), The 1733 Ranch; third, (67), Michael Coffey.

Rose Comb Rhode Island Red Cockerel—First, (245), Cloverdale Poultry Yards; second, (43), Cloverdale Poultry Yards; third, (70), O. C. Bierma.

Rose Comb Rhode Island Red Hen—First, (8937), 1733 Ranch; second, (8906), 1733 Ranch; third, (26), Karl Koenigsberger.

Rose Comb Rhode Island Red Pullet—First, (17), Cloverdale Poultry Yards; second, (34), F. W. Mason; third, (8245), Arthur Johnson.

Rose Comb Rhode Island Red Exhibition Pen, Fowls—First, (38-51-61-71-88), Michael Coffey; second, (8918-8928-8922-8903-8929), Edward Swan.

Rose Comb Rhode Island Red Exhibition Pen, Chicks—First, (117-113-87-99-178), W. C. Jacob; second (244-246-247-248-249), Cloverdale Poultry Yards.

Buckeye Cock—First, Hanson's Poultry Farm; second, Hanson's Poultry Farm.

Buckeye Cockerel—First, Carl J. Hedberg.

Buckeye Hen—First, Hanson's Poultry Farm; second, Hanson's Poultry Farm.

Buckeye Pullet—First, (85), Carl J. Hedberg.

ASIATIC.

EXHIBITORS

Harry L. Browne, Indianola; Crescent Poultry Farms, Des Moines; Chas. B. Dyke, Indianola; Fairholme Poultry Yards, Boone; Geo. W. Garvin, Mt. Pleasant; Weir Hart, Bondurant; Hanson's Poultry Farm, Dean; F. P. Hetfelfinger, Long Lake, Minn.; F. W. Johnson, Monroe; Mrs. W. T. Otcheck, Grinnell; R. E. West, Altoona.

AWARDS

SWEEPSTAKES.

Cockerel—(69), Weir Hart.

Pullet—Hanson's Poultry Farm.

Flock—First, Crescent Poultry Farms.

Light Brahma Cock—First, (52), Fairholme Poultry Yards; second, (42), F. W. Johnson; third, (38), Crescent Poultry Farms.

Light Brahma Cockerel—First, (56), Weir Hart; second, Crescent Poultry Farms.

Light Brahma Hen—First, (57), Weir Hart; second, (34), Fairholme Poultry Yards; third, Crescent Poultry Farms.

Light Brahma Pullet—First, (69), Weir Hart; second, Crescent Poultry Farms.

Light Brahma Exhibition Pen, Fowls—First, (42), Fairholme Poultry Yards; second, (53-54-52-74-73), Weir Hart.

Light Brahma Exhibition Pen, Chicks—First, (61-64-62-60-98), Weir Hart.

Dark Brahma Cock—First, (1), Harry L. Browne; second, Crescent Poultry Farms; third, (12), Harry L. Browne.

Dark Brahma Cockerel—First, Hanson's Poultry Farm; second, (24), Harry L. Browne; third, (13), Harry L. Browne.

Dark Brahma Hen—First, (18), Harry L. Browne; second, (85), Crescent Poultry Farms; third, Crescent Poultry Farms.

Dark Brahma Pullet—First, Hanson's Poultry Farm; second, (15), Harry L. Browne.

Buff Cochin Cock—First, Chas. B. Dyke; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Buff Cochin Cockerel—First, Crescent Poultry Farms.

Buff Cochin Hen—First, (33), Crescent Poultry Farms; second, (63), Crescent Poultry Farms; third, (421), Hanson's Poultry Farm.

Buff Cochin Pullet—First, Hanson's Poultry Farm; second, (28), Chas. B. Dyke; third, Crescent Poultry Farms.

Buff Cochin Exhibition Pen, Fowls—First, Crescent Poultry Farms.

Buff Cochin Exhibition Pen, Chicks—First, Crescent Poultry Farms.

Partridge Cochin Cock—First, (44), Crescent Poultry Farms.

Patridge Cochin Cockerel—First, Crescent Poultry Farms; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Partridge Cochin Hen—First, Crescent Poultry Farms; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Partridge Cochin Pullet—First, Crescent Poultry Farms; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Partridge Cochin Exhibition Pen, Fowls—First, Crescent Poultry Farms.

Partridge Cochin Exhibition Pen, Chicks—First, Crescent Poultry Farms.

White Cochin Cock—First, Crescent Poultry Farms.

White Cochin Hen—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

Black Langshan Cock—First, (2), F. P. Heffelfinger; second, Crescent Poultry Farms; third, (1), F. P. Heffelfinger.

Black Langshan Cockerel—First, (42), Geo. W. Garvin; second, Hanson's Poultry Farm; third, Crescent Poultry Farms.

Black Langshan Hen—First, (5), F. P. Heffelfinger; second (4), H. P. Heffelfinger; third, (125), Crescent Poultry Farms.

Black Langshan Pullet—First, Crescent Poultry Farms; second, (48), George W. Garvin; third, (82), Weir Hart.

Black Langshan Exhibition Pen, Fowls—First, (130-119-168-175-47), Geo. W. Garvin; second, Crescent Poultry Farms; third, (22-28-21-9-0), R. E. West.

Black Langshan Exhibition Pen, Chicks—First, (7056-58-6-8), Geo. W. Garvin; second, Crescent Poultry Farms; third, (76-77-81-85-86), Weir Hart.

White Langshan Cock—First, Hanson's Poultry Farm; second, Crescent Poultry Farms.

White Langshan Cockerel—First, (10), R. E. West; second, (79), Weir Hart; third, Hanson's Poultry Farm.

White Langshan Hen; First, Hanson's Poultry Farm; second, Hanson's Poultry Farm; third, (80), Weir Hart.

White Langshan Pullet—First, (88), Weir Hart; second, (84), Weir Hart; third, Crescent Poultry Farms.

MEDITERRANEAN.

EXHIBITORS

Clifford A. Barr, Lincoln, Nebr.; August Beck, Granger; W. O. Coon, Des Moines; Co-operative Poultry Farm, Newton; Crescent Poultry Farms, Des Moines; J. E. Cundy, Milford; Chris. Deckas, Des Moines; Mrs. W. O. DeMoss, Des Moines; M. A. Dowling, Reasnor; Mrs. George Grayson, Des Moines; Hanson's Poultry Farm, Dean; Walter Hobbs, Kearney, Nebr.; Hyperion White Leghorn Farm, Des Moines; O. E. Ingle, Bondurant; F. W. Johnson, Monroe; T. L. Jones, Boone; C. D. Joslin, Holstein; S. W. Kinney, Owatonna, Minn.; H. A. Kuhtz, Waterloo; Frank L. Longo, Des Moines; B. H. Lunnon, Des Moines; Mrs. H. H. Muggs, Des Moines; Wm. C. North, Des Moines; A. B. Porter, Mt. Pleasant; Albert R. Rice, Waverly; Reeves Poultry Farm, Adelphi; Roberts & Harvey, Des Moines; E. J. Rood, Webster City; John Sexton, Albia; Anthony Stocker, Des Moines; Dwight Swan, Kearney, Nebr.; A. G. Thompson, Central City, Nebr.; C. D. Warren, Altoona; R. E. West, Altoona; H. E. Williamson, Dubuque; J. M. Williamson, Des Moines.

AWARDS.

SWEEPSTAKES.

Cockerel—(12345), A. G. Thompson.

Pullet—(8), A. G. Thompson.

Flock—First, (358 to 368), Roberts & Harvey; second, (8610-8607-8629-8638-8644-8626-8612-8643-8609-8636-8613), Dwight Swan; third, (231-233-214-222-233-201-202-205-206-207), Hyperion White Leghorn Farm.

Single Comb Brown Leghorn Cock—First, (131), W. O. Coon; second, (64), W. O. Coon; third, (37), F. W. Johnson.

Single Comb Brown Leghorn Cockerel—First, (48), F. W. Johnson; second, (147), W. O. Coon; third, (61), W. O. Coon.

Single Comb Brown Leghorn Hen—First, (4), W. O. Coon; second, Hanson's Poultry Farm; third, (194), W. O. Coon.

Single Comb Brown Leghorn Pullet—First, (9), B. H. Lunnon; second, (7), B. H. Lunnon; third, (8), B. H. Lunnon.

Single Comb Brown Leghorn Exhibition Pen, Fowls—First, (52-73-75-267-128), W. O. Coon; second, Crescent Poultry Farms.

Single Comb Brown Leghorn Pen, Chicks—First, (172-98-177-175-139), W. O. Coon; second, Crescent Poultry Farms.

Rose Comb Brown Leghorn Cock—First, Hanson's Poultry Farm; second, Crescent Poultry Farms; third, Hanson's Poultry Farm.

Rose Comb Brown Leghorn Cockerel—First, (152), Crescent Poultry Farms; second,. Hanson's Poultry Farm; third, Hanson's Poultry Farm.

Rose Comb Brown Leghorn Hen—First, (158), Crescent Poultry Farms; second, (6), C. D. Joslin; third, (166), Crescent Poultry Farms.

Rose Comb Brown Leghorn Pullet—First, (168), Crescent Poultry Farms; second, Hanson's Pōultry Farm; third, (154), Crescent Poultry Farms.

Single Comb White Leghorn Cock—First, Crescent Poultry Farms; second, (53), H. E. Williamson; third, (236), Hyperion White Leghorn Farm.

Single Comb White Leghorn Cockerel—First, (78), E. J. Rood; second, (8602), Dwight Swan; third, (82), H. E. Williamson.

Single Comb White Leghorn Hen—First, (3), John Sexton; second, (20), H. E. Williamson; third, (161), Crescent Poultry Farms.

Single Comb White Leghorn Pullet—First, (8), A. G. Thompson; second, (255), Hyperion White Leghorn Farm; third, (204), J. M. Williamson.

Single Comb White Leghorn Exhibition Pen, Fowls—First, (267-269-256-258-259), Hyperion White Leghorn Farm; second, Crescent Poultry Farms.

Single Comb White Leghorn Exhibition Pen, Chicks—First, (1-2-3-4-5), A. G. Thompson; second, (210-211-212-213-214), J. M. Williamson; third, Dwight Swan.

Rose Comb White Leghorn Cock—First, (123), Crescent Poultry Farms.

Rose Comb White Leghorn Cockerel—First, (115), Crescent Poultry Farms.

Rose Comb White Leghorn Hen—First, (122), Crescent Poultry Farms; second, (106), Crescent Poultry Farms; third, (137), Crescent Poultry Farms.

Rose Comb White Leghorn Pullet—First, (120), Crescent Poultry Farms; second, (125), Crescent Poultry Farms.

Rose Comb White Leghorn Exhibition Pen, Fowls—First, Crescent Poultry Farms.

Rose Comb White Leghorn Exhibition Pen, Chicks—First, Crescent Poultry Farms.

Single Comb Buff Leghorn Cock—First, (51), Clifford A. Bar; second, Crescent Poultry Farms; third, (1), O. E. Ingle.

Single Comb Buff Leghorn Cockerel—First, (53), Clifford A. Barr; second, (30), O. E. Ingle; third, Crescent Poultry Farms.

Single Comb Buff Leghorn Hen—First, (52), Clifford A. Barr; second, (6), O. E. Ingle; third, (4), O. E. Ingle.

Single Comb Buff Leghorn Pullet—First, (64), Clifford A. Barr; second, (12), O. E. Ingle; third, (7), O. E. Ingle.

Single Comb Buff Leghorn Exhibition Pen, Fowls—First, Crescent Poultry Farms.

Single Comb Buff Leghorn Exhibition Pen, Chicks—First, (55-56-57-58-59), Clifford A. Barr; second, (14-15-16-17-17), O. E. Ingle.

Single Comb Black Leghorn Cock—First, Crescent Poultry Farms.

Single Comb Black Leghorn Cockerel—First, Crescent Poultry Farms.

Single Comb Black Leghorn Hen—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

Single Comb Black Leghorn Pullet—First, Crescent Poultry Farms.

Sicilian Buttercup Cock—First, (49), Crescent Poultry Farms.

Siciliian Buttercup Cockerel—First, Crescent Poultry Farms; seocnd, Crescent Poultry Farms; third, Crescent Poultry Farms.

Sicilian Buttercup Hen—First, Crescent Poultry Farms; second, Crsecent Poultry Farms.

Sicilian Buttercup Cockerel—First, Crescent Poultry Farms; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Single Comb Black Minorca Cock—First, Crescent Poultry Farms.

Single Comb Black Minorca Cockerel—First, Crescent Poultry Farms; second, (35), A. B. Porter.

Single Comb Black Minorca Hen—First, (199), A. B. Porter; second, Crescent Poultry Farms; third, (1), T. L. Jones.

Single Comb Black Minorca Pullet—First, Crescent Poultry Farms.

Single Comb Black Minorca Exhibition Pen, Fowls—First, (8-5-2-24-3), T. L. Jones; second, (42-164-192-198-78), A. B. Porter; third, Crescent Poultry Farms.

Rose Comb Black Minorca Cock—First, (61), H. A. Kuhtz; second, (8), J. E. Cundy; third, Crescent Poultry Farms.

Rose Comb Black Minorca Cockerel—First, (18), J. E. Cundy; second, (14), J. E. Cundy; third, (15), H. A. Kuhtz.

Rose Comb Black Minorca Hen—First, Hanson's Poultry Farm; second, (22), J. E. Cundy; third, (11), J. E Cundy.

Rose Comb Black Minorca Pullet—First, (42), J. E. Cundy; second, (26), J. E. Cundy; third, (17), H. A. Kuhtz.

Single Comb White Minorca Cock—First, Hanson's Poultry Farm; second, Crescent Poultry Farms.

Single Comb White Minorca Cockerel—First, Hanson's Poultry Farm; second, Crescent Poultry Farm; third, Crescent Poultry Farms.

Single Comb White Minorca Hen—First, Hanson's Poultry Farm; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Single Comb White Minorca Pullet—First, Hanson's Poultry Farm; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

White Faced Black Spanish Cock—First Crescent Poultry Farms; second, R. E. West.

White Faced Black Spanish Cockerel—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

White Faced Black Spanish Hen—First, Crescent Poultry Farms; second, (98), R. E. West.

White Faced Black Spanish Pullet—First, Crescent Poultry Farms.

Blue Andalusian Cock—First, Crescent Poultry Farms; second, Hanson's Poultry Farm; third, Crescent Poultry Farms.

Blue Andalusian Cockerel—First, Crescent Poultry Farms; second, (56), S. W. Kinney; third, (63), S. W. Kinney.

Blue Andalusian Hen—First, (73), S. W. Kinney; second, Crescent Poultry Farms; third, Hanson's Poultry Farm.

Blue Andalusian Pullet—First, (67), S. W. Kinney; second, Hanson's Poultry Farm; third, Crescent Poultry Farms.

Mottled Ancona Cock—First, (101), Mrs. W. O. DeMoss; second, (128), Mrs. W. O. DeMoss; third, (102), Mrs. W. O. DeMoss.

Mottled Ancona Cockerel—First, (113), Mrs. W. O. DeMoss; second, Crescent Poultry Farms; third, (259), Reeves Poultry Farm.

Mottled Ancona Hen—First, (104), Mrs. W. O. DeMoss; second, Hanson's Poultry Farms; third, (105), Mrs. W. O. DeMoss.

Mottled Ancona Pullet—First, (114), Mrs. W. O. DeMoss; second, (10), Mrs. H. H. Mugge; third, (11), Frank L. Longo.

Silver Campine Cock—First, (20), M. A. Dowling; second, Crescent Farms.

Silver Campine Hen—First, Hanson's Poultry Farm; second, (23), M. A. Dowling; third, Crescent Poultry Farms.

Silver Campine Pullet—First, Crescent Poultry Farms; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

ENGLISH.

EXHIBITORS.

O. M. Brown, Slater; H. P. Brychta, St. Joseph, Mo.; Co-operative Poultry Farms, Newton; Dr. W. E. Creath, Ottumwa; Crescent Poultry Farms, Des Moines; W. H. Dunn, Berwick; Geo. W. Garvin, Mt. Pleasant; Hanson's Poultry Farm, Dean; J. H. Hartshorn, Traer; Carl J. Hedberg, Boxholm; Walter Hobbs, Kearney, Nebr.; S. W. Kinney, Owatonna, Minn.; M. C. Kooser, Ames;

Bert O'Keen, Ankeny; E. C. Pyles, Union; Floyd Russell, Kearneye, Nebr.; Howard Sage, Grinnell; M. G. Scudder, Central City, Nebr.; W. H. Servis, Garden Grove; Snyder Bros., Letts; Sunny Oak Poultry Farm, Dumont; Taylor Bros., Cambridge, Ill.; The 1733 Ranch, Kearney, Nebr.; W. E. Walker, What Cheer; R. E. West, Altoona; J. S. Wright, Rockwell City.

AWARDS.

SWEEPSTAKES.

Cockerel—M. G. Scudder.

Pullet—The 1733 Ranch.

Flock—First, (8321-8349-8324-8320-8343-8350-8316-8328-8333-8337-40), M. G. Scudder; second, (G0022-163-132-208-18-210-195-0104-G0065-G0062-G0027), J. S. Wright; third, (8330-8344-8341-8334-8319-8340-8342-8322-8338-8346-1), M. G. Scudder.

Silver Gray Dorking Cock—First, Crescent Poultry Farms.

Silver Gray Dorking Hen—First, Crescent Poultry Farms.

Rose Comb Red Cap Cock—First, (60), Crescent Poultry Farms; second, (11), R. E. West.

Rose Comb Red Cap Hen—First, (60), R. E. West; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Rose Comb Red Cap Pullet—First, Crescent Poultry Farms.

Red Sussex Cock—First, Crescent Poultry Farms.

Red Sussex Hen—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

Speckeled Sussex Cock—First, (17), Geo. W. Garvin; second, Hanson's Poultry Farm.

Speckeled Sussex Hen—First, Hanson's Poultry Farm; second, Hanson's Poultry Farm; third, Hanson's Poultry Farm.

Speckeled Sussex Pullet—First, (44), Geo. W. Garvin; second, Hanson's Poultry Farm.

Single Comb Buff Orpington Cock—First, (8812), Floyd Russell; second, (8847), Floyd Russell; third, (8803), Floyd Russell.

Single Comb Buff Orpington Cockerel—First, (195), Crescent Poultry Farms; second, (G0021), J. S. Wright; third, (45), E. C. Pyles.

Single Comb Buff Orpington Hen—First, (G0024), J. S. Wright; second, (8846), Floyd Russell; third, (8832), Floyd Russell.

Single Comb Buff Orpington Pullet—First, (8840), Floyd Russell; second, (48), Floyd Russell; third, (G0004), J. S. Wright.

Single Comb Buff Orpington Exhibition Pen, Fowls—First, (G0030-176-2-G0053-G0069), J. S. Wright; second, (8809-8829-8815-35-9088), Floyd Russell; third, (8816-8820-8848-8837-8802), Floyd Russell.

Single Comb Buff Orpington Exhibition Pen, Chicks—First, (40-41-42-43-44), E. C. Pyles; second, (84-94-51-69-8457-8480-8500), Sunny Oak Poultry Farm; third, (6-7-8-9-10), Bert O'Keen.

Single Comb Black Orpington Cock—First, (2477), Crescent Poultry Farms; second, (390), O. M. Brown; third, (8835), Walter Hobbs.

Single Comb Black Orpington Cockerel—First, (11), H. P. Brychta; second (365), O. M. Brown; third, (87), Carl J. Hedberg.

Single Comb Black Orpington Hen—First, (367), O. M. Brown; second, (15), Walter Hobbs; third, Crescent Poultry Farms.

Single Comb Black Orpington Pullet—First, (370), O. M. Brown; second, (14), H. P. Brychta; third, Crescent Poultry Farms.

Single Comb Black Orpington Exhibition Pen, Fowls—First, (50426-1725M-5025C-5049C-5005C), Sunny Oak Poultry Farms; second, Crescent Poultry Farms.

Single Comb White Orpington Cock—First, (8876), The 1733 Ranch; second, (8879), The 1733 Ranch; third, (8881), The 1733 Ranch.

Single Comb White Orpington Cockerel—First, (8869), The 1733 Ranch; second, (8873), The 1733 Ranch; third, (59169), W. N. Servis.

Single Comb White Orpington Hen—First, (62), M. C. Kooser; second, (8877), The 1733 Ranch; third, (8868), The 1733 Ranch.

Single Comb White Orpington Pullet—First, (8884), The 1733 Ranch; second, (C8524L), W. N. Servis; third, (518), Howard Sage.

Single Comb White Orpington Exhibition Pen, Fowls—First, (8887-8889-8871-8851-8894, The 1733 Ranch; second, (48--38-39-41-32), J. H. Hartshorn; third, (8862-8855-8870-8874-8854), The 1733 Ranch.

Single Comb White Orpington Exhibition Pen, Chicks—First, (8856-8893-8880-8892-8900), The 1733 Ranch; second, (6-3-12-536-511), Howard Sage; third, (C9198L-C8545L-59198-C8541L-C8506L), W. N. Servis.

Blue Orpington Cock—First, (28), Dr. W. E. Creath; second, (43), Dr. W. E. Creath; third, (35), Dr. W. E. Creath.

Blue Orpington Cockerel—First, 28, W. E. Walker; second, (36), Dr. W. E. Creath.

Blue Orpington Hen—First, Dr. W. E. Creath; second, Dr. W. E. Creath; third, Dr. W. E. Creath.

Blue Orpington Pullet—First, (24), Dr. W. E. Creath; second, (53), Dr. W. E. Creath; third, Crescent Poultry Farms.

Blue Orpington Exhibition Pen, Fowls—First, (30-16-4-64-76), Dr. W. E. Creath.

Blue Orpington Exhibition Pen, Chicks—First, (46-36-49-26-47), Dr. W. E. Creath.

POLISH.

EXHIBITORS.

Crescent Poultry Farms, Des Moines;Hanson's Poultry Farm, Dean; R. E. West, Altoona.

AWARDS.

White Crested Black Polish Cock—First, R. E. West; second, Crescent Poultry Farms.

White Crested Black Polish Cockerel—First, Crescent Poultry Farms.

White Crested Black Polish Hen—First, Crescent Poultry Farms; second, R. E. West.

Bearded Golden Polish Hen—First, Hanson's Poultry Farm; second Hanson's Poultry Farm.

Non-Bearded Golden Polish Hen—First, Hanson's Poultry Farm; second, Hanson's Poultry Farm.

Non-Bearded Silver Polish Cock—First, Crescent Poultry Farms.

Non-Bearded Silver Polish Cockerel—First, Crescent Poultry Farms.

Non-Bearded Silver Polish Hen—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

DUTCH.

EXHIBITORS.

Crescent Poultry Farms, Des Moines; Chas. B. Dyke, Indianola; Hanson's Poultry Farm, Dean.

AWARDS.

Silver Spangled Hamburg Cock—First, Crescent Poultry Farms.

Silver Spangled Hamburg Cockerel—First, (20), Chas B. Dyke; second, Crescent Poultry Farms.

Silver Spangled Hamburg Hen—First, (3), Chas. B. Dyke; second, Crescent Poultry Farms.

Silver Spangled Hamburg Pullet—First, (13), Chas. B. Dyke; second, Crescent Poultry Farms.

Black Hamburg Cock—First, Hanson's Poultry Farm.

Black Hamburg Cockerel—First, Crescent Poultry Farms.

Black Hamburg Hen—First, Hanson's Poultry Farm; second, Crescent Poultry Farms.

Black Hamburg Pullet- First, Crescent Poultry Farms, second, Crescent Poultry Farms.

FRENCH.

EXHIBITORS.

Crescent Poultry Farms, Des Moines, Hanson's Poultry Farm, Dean; F. P. Heffelfinger, Long Lake, Minn.

AWARDS.

Mottled Houdan Cock—First Crescent Poultry Farms.

Mottled Houdan Cockerel—First, F. P. Heffelfinger.

Mottled Houdan Hen—First, F. P. Heffelfinger; second, Hanson's Poultry Farm.

GAME AND GAME BANTAM.

EXHIBITORS.

M. H. Buck, Prairie City; Crescent Poultry Farms; Hanson's Poultry Farm.

AWARDS.

Black Breasted Red Game Cockerel—First, (138), Crescent Poultry Farms.

Black Breasted Red Game Hen—First, (165), Crescent Poultry Farms; second, (18), Crescent Poultry Farms.

Red Pyle Game Cock—First, Hanson's Poultry Farm.

Black Brested Game Bantam Cock—First, M. H. Buck.

Red Pyle Game Bantam Hen—First, M. H. Buck; second, (5), M. H. Buck.

Red Pyle Game Bantam Pullet—First, M. H. Buck.

ORIENTAL GAMES AND BANTAMS.

EXHIBITORS.

Crescent Poultry Farms, Des Moines; Hanson's Poultry Farm, Dean.

AWARDS.

Cornish Indian Cock—First, (109), Crescent Poultry Farms; second, (112), Crescent Poultry Farms.

Cornish Indian Cockerel—First, (194), Crescent Poultry Farms; second, (190), Crescent Poultry Farms; third, (191), Crescent Poultry Farms.

Cornish Indian Hen—First, (120), Crescent Poultry Farms; second, (111), Crescent Poultry Farms; third, (108), Crescent Poultry Farms.

Cornish Indian Pullet First, Hanson's Poultry Farm; second, Hanson's Poultry Farm; third, (184), Crescent Poultry Farms.

ORIENTAL GAMES AND BANTAMS.

EXHIBITORS.

Crescent Poultry Farms, Des Moines; Hanson's Poultry Farm, Dean.

AWARDS.

White Indian Cock—First, Crescent Poultry Farms.

White Indian Cockerel—First, Hanson's Poultry Farm.

White Indian Hen—First, Hanson's Poultry Farm; second, Crescent Poultry Farms.

White Indian Pullet—First, Hanson's Poultry Farm.

Black Sumatra Cock—First Hanson's Poultry Farm; second, Crescent Poultry Farms.

Black Sumatra Hen—First, (51), Crescent Poultry Farms; second, (129), Crescent Poultry Farms.

ORNAMENTAL GAMES AND BANTAMS.

EXHIBITORS.

Ronald L. Barnard, Ames; P. S. Brunk, Altoona; Crescent Poultry Farms, Des Moines; Mrs. Frank Harris, Des Moines; Frank Harris, Des Moines; Hanson's Poultry Farm, Dean; Weir Hart, Bondurant; Walter Hobbs, Kearney, Nebr.; Russell F. Palmer, Kearney, Nebr.; C. D. Porter, Altoona; J. O. Porter, Altoona; F. L. Reinhard, Ottumwa; Floyd Russell, Kearney, Nebr.; R. E. West, Altoona.

AWARDS.

Golden Seabright Cock—First, Crescent Poultry Farms; second, (22), Floyd Russell.

Golden Seabright Cockerel—First, (10173), Floyd Russell; second, (10176), Floyd Russell.

Golden Seabright Hen—First, (10192), Floyd Russell; second, F. L. Reinhard.

Golden Seabright Pullet—First, F. L. Reinhard.

Black Rose Comb Cock—First, (31), Russell F. Palmer; second, (33), Mrs. Frank Harris.

Black Rose Comb Cockerel—First, Mrs. Frank Harris.

Black Rose Comb Hen—First, (14), Russell F. Palmer; second, (1), Mrs. Frank Harris.

Black Rose Comb Pullet—First, (4), Mrs. Frank Harris.

Buff Cochin Cock—First, F. L. Reinhard; second, Crescent Poultry Farms.

Buff Cochin Cockerel—First, (77), J. O. Porter; second, (90), Crescent Poultry Farms.

Buff Cochin Hen—First, Crescent Poultry Farms; second, (33), Russell F. Palmer.

Buff Cochin Pullet—First, Crescent Poultry Farms; second, P. S. Brunk.

Partridge Cochin Cock—First, Crescent Poultry Farms; second, (14), R. E. West.

Partridge Cochin Hen—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

White Cochin Cock—First, Crescent Poultry Farms; second, (11), Walter Hobbs.

White Cochin Hen—First, Crescent Poultry Farms; second (96), Weir Hart.

Black Cochin Cock—First, (6,, Frank Harris; second, (3), Frank Harris.

Black Cochin Cockerel—First, (7), Frank Harris; second, Crescent Poultry Farms.

Black Cochin Hen—First, (8), Frank Harris; second, Hanson's Poultry Farm.

Black Cochin Pullet—First, Crescent Poultry Farms.

Black Tailed Japanese Cock—First, (97), R. E. West; second, Crescent Poultry Farms.

Black Tailed Japanese Cockerel—First, Crescent Poultry Farms.

Black Tailed Japanese Hen—First, Crescent Poultry Farms; second, (8), Russell F. Palmer.

Black Tailed Japanese Pullet—First, Crescent Poultry Farms.

White Japanese Hen—First, (19), Russell F. Palmer; second, (37), Russell F. Palmer.

MISCELLANEOUS.

EXHIBITORS.

Crescent Poultry Farms, Des Moines; S. W. Kinney, Owatonna, Minn.

AWARDS.

White Silkies Cock—First, (72), S. W. Kinney; second, (71), S. W. Kinney.

White Silkies Cockerel—First, (68), S. W. Kinney; second, (62), S. W. Kinney.

White Silkies Hen—First, (61), S. W. Kinney; second, (69), S. W. Kinney.

White Silkies Pullet—First, S. W. Kinney; second, Crescent Poultry Farms.

CAPONS.

EXHIBITORS.

Hanson's Poultry Farm, Dean; J. M. Williamson, Des Moines.

AWARDS.

Any Variety Capons—First, Hanson's Poultry Farm; second, Hanson's Poultry Farm; third, Hanson's Poultry Farm.

PIGEONS.

EXHIBITORS.

Crescent Poultry Farms, Des Moines; F. L. Reinhard, Ottumwa; Dana Wagner, Des Moines.

AWARDS.

Pair Homing Pigeons—First, Crescent Poultry Farms; second, Crescent Poultry Farms.

Pair Fantail Pigeons—First, Crescent Poultry Farms; second, Dana Wagner.

Pair Swallow Pigeons—First, F. L. Reinhard.

Pair Tumbler Pigeons—First, Crescent Poultry Farms.

TURKEYS.

EXHIBITORS.

Co-operative Poultry Farm, Newton; Crescent Poultry Farms, Des Moines; Mrs. Millard Thompson, Polk; James F. Swan, Kearney, Nebr.; Mrs. Lucile Turner, Polk; J. U. Walker, Swan.

AWARDS.

Bronze TurkeyCock—First, James F. Swan; second, James F. Swan; third, Crescent Poultry Farms.

Bronze Turkey Hen—First, James F. Swan; second, James F. Swan.

Buff Turkey Cock—First, J. U. Walker.

White Holland Turkey Cock—First, James F. Swan; second, (27), Mrs. Lucile Turner; third, (100), Mrs. Millard Thompson.

White Holland TurkeyCockerel—First, (16), Mrs. Millard Thompson; second, (14), Mrs. Lucile Turner.

White Holland Turkey Hen—First (12), Co-operative Poultry Farm; second, James F. Swan; third, (51), Mrs. Millard F. Thompson.

White Holland Turkey Pullet—First (12), Co-operative Poultry Farm; second, (97), Mrs. Lucile Turner.

DUCKS.

EXHIBITORS

H. A. Brothers, Des Moines; M. H. Buck, Prairie City; Crescent Poultry Farms, Des Moines; Mrs. George Grayson, Des Moines; Hanson's Poultry Farm, Dean; C. D. Porter, Altoona; F. L. Reinhard, Ottumwa; James F. Swan, Kearney, Neb.; F. A. Antwerp, Lohrville; C. & T. Van Lint, Pella; R. H. Varnum, Marshalltown; V. G. Warner, Bloomfield; C. D. Warren, Altoona; R. E. West, Altoona.

AWARDS.

White Pekin Drake (Young)—First, (55), V. G. Warner; second, (88), James F. Swan; third, (56), V. G. Warner.

White Pekin Duck (Old)—First, (16). F. A. Van Antwerp; second, (58), V. G. Warner; third, (57), V. G. Warner.

White Pekin Duck (Young)—First (2), R. H. Varnum; second, (59), V. G. Warner; third, (94), James F. Swan.

White Pekin Drake (Old)—First, (61), C. D. Warren; second, (90), C. D. Porter; third, (777), F. A. Van Antwerp.

Colored Rouen Drake (Old)—First, (8), C. & C. T. Van Lint; second, (4), C. & C. T. Van Lint.

Colored Rouen Drake (Young)—First, Hanson‘s Poultry Farm; second, R. E. West.

Colored Rouen Duck (Old)—First, (15), C. & C. T. Van Lint; second, C. & C. T. Van Lint.

Black Cayuga Drake (Old)—First, R. E. West.

Black Cayuga Duck (Old)—First, (57), R. E. West.

Black Cayuga Duck (Young)—First, (50), R. E. West.

Gray Call Drake (Old)—First, Hanson's Poultry Farm; second, Hanson's Poultry Farm.

Mallard Drake (Old)—First, James F. Swan.

Mallard Darke (Young)—First, James F. Swan.

Mallard Drake (Young)—First, James F. Swan.

Mallard Duck (Young)—First, James F. Swan.

Colored Muscovy Drake (Old)—First, (81), M. H. Buck; second, (29), R. E. West; third, Crescent Poultry Farms.

Colored Muscovy Drake (Young)—First, (10), R. H. Varnum.

Colored Muscovy Duck (Old)—First, (87), M. H. Buck; second, (41), M. H. Buck; third, (19), R. E. West.

White Muscovy Drake (Old)—First, (6), R. R. Varnum; second, (15), R. E. West; third, (165), H. A. Brothers.

White Muscovy Duck (Old)—First, (7), R. H. Varnum; second, (98), H. A. Brothers; third, (8), R. E. West.

Fawn and White Indian Runner Drake (Old)—First, F. L. Reinhard; second, F. L. Reinhard; third, (96), James F. Swan.

Fawn and White Indian Runner Drake (Young)—First, (79), James F. Swan; second, F. L. Reinhard; third, F. L. Reinhard.

Fawn and White Indian Runner Duck (Old)—First, R. L. Reinhard; second, F. L. Reinhard; third, (66), R. H. Varnum.

Fawn and uhite Indian Runner Duck (Young)—First, F. L. Reinhard; second, F. L. Reinhard; third, James F. Swan.

White Indian Runner Drake (Old)—First, F. L. Reinhard; second, (18), C. D. Warren; third, (98), C. D. Warren.

White Indian Runner Drake (Young)—First, F. L. Reinhard; second, F. L. Reinhard.

White Indian Runner Duck (Old)—First, F. L. Reinhard; second, F. L. Reinhard; third, (19), C. D. Warren.

White Indian Runner Duck (Young)—First, F. L. Reinhard; second, F. L. Reinhard.

Blue Swedish Drake (Old)—First, (5), R. H. Varnum.

Blue Swedish Duck (Old)—First, (4), R. H. Varnum.

Blue Swedish Duck (Young)—First, (3), R. H. Varnum.

GEESE.

EXHIBITORS

O. C. Bierma, Mitchellville; Co-operative Poultry Farms, Newton; Crescent Poultry Farms, Des Moines; Mrs. W. M. Curl, Adelphi; Frank A. Gould, Rockwell City; Hanson's Poultry Farm; Weir Hart, Bondurant; F. L. Reinhard, Ottumwa; James F. Swan, Kearney, Neb.; R. E. West, Altoona.

AWARDS.

Gray Toulouse Gander (Old)—First, (84), Frank A. Gould; second, (65), James F. Swan; third, (7495), Crescent Poultry Farms.

Gray Toulouse Gander (Young)—First, F. L. Reinhard; second, Crescent Poultry Farms; third, Crescent Poultry Farms.

Gray Toulouse Goose (Old)—First, (148), Crescent Poultry Farms; second, (81), Frank A. Gould; third, (35), Cooperative Poultry Farms.

Gray Toulouse Gander (Young)—First, F. L. Reinhard; second, Weir Hart; third, Crescent Poultry Farms.

White Embden Gander (Old)—First, (54), O. C. Bierma; second, F. L. Reinhard; third, Crescent Poultry Farms.

White Embden Gander (Young)—First, F. L. Reinhard; second, O. C. Bierma; third, Crescent Poultry Farms.

White Embden Gander (Young)—First, F. L. Reinhard; second, O .C. hard; third, Crescent Poultry Farms.

White Embden Goose (Old)—First, O. C. Bierma; second, F. L. Reinhard; third, Crescent Piultry Farms.

Gray African Gander—First, (62), R. E. West; second, (16), James F. Swan; third, (17), James F. Swan.

Gray African Goose (Old)—First, (64), R. E. West; second, (25), James F. Swan; third, (87), James F. Swan.

Brown Chinese Gander (Old)—First, Hanson's Poultry Farm.

Brown Chinese Gander (Young)—First, Hanson's Poultry Farm.

Brown Chinese Goose (Old)—First, Hanson's Poultry Farm; second, R. E. West; third, R. E. West.

Brown Chinese Goose (Young)—First, Hanson's Poultry Farm.

White Chinese Gander (Old)—First, R. E. West; second, F. L. Reinhard; third, Hanson's Poultry Farm.

White Chinese Gander (Young)—First, F. L. Reinhard; second, F. L. Reinhard.

White Chinese Goose (Old)—First, R. E. West; second, Hanson's Poultry Farm; third, Hanson's Poultry Farm.

White Chinese Goose(Young)—First, F. L. Reinhard; second, F. L. Reinhard.

Gray Wild or Canadian Gander (Old)—First, James F. Swan; second, Crescent Poultry Farms; third, James F. Swan.

Gray Wild or Canadian Goose (Old)—First, James F. Swan; second, Crescent Poultry Farms; third, James F. Swan.

BABY HEALTH CONTEST.

BABIES FROM CITIES OVER 10,000.

Boy Twelve Months and Under Twenty-four Months Old—

		Score
1	Robert Bentley Throckmorton, Des Moines	97.6
2	Frank Webster Shaw, Jr., Des Moines	95.3
3	Charles Edmond Rinehart, Des Moines	95.2
4	Frederick Brown Moore, Des Moines	94.9

Boy Twenty-four Months and Under Thirty-six Months Old—

1	Carroll Johnson, Des Moines	97.7
2	Sherman Wesley Buck, Des Moines	96.9
3	Frank LeRoy Conkling, Des Moines	96.1
4	Arthur Woodrow Corey, Des Moines	96.0

Girl Twelve Months and Uunder Twenty-four Months Old—

1	Shirley Brunson, Des Moines	95.4
2	Eleanor Merle Mefferd, Des Moines	94.5
3	Mary Belle Friedmeyer, Des Moines	94.2
4	Mary Frances Woodcock, Des Moines	93.4

Girl Twenty-four Months and Under Thirty-six Months Old—

1	Marjorie Schuetz, Des Moines	97.4
2	Alice Jeanette Olander, Des Moines	96.8
3	Wilma Claire Keil, Des Moines	94.9
4	Francine Marjorie Higgins, Des Moines	94.8

BABIES FROM CITIES AND TOWNS LESS THAN 10,000.

Boy Twelve Months and Under Twenty-four Months Old —

		Score
1	Maurice V. Gowdey, Ames	96.1
2	John Howard Carhart, Sheffield	93.7
3	Earl Eugene Mason, Valley Junction	93.6
4	Richard Allen Snyder, Roland	91.8

Boy Twenty-four Months and Under Thirty-six Months Old—

1	Burton Homer Friar, Grimes	93.6
2	Wendel Hobart Diebel, Jefferson	93.1
3	William Edward Nichols, Atlantic	89.9
4	John Franklin Gray, Jr., Hocking	89.7

Girl Twelve Months and Under Twenty-four Months Old—

1	Barbara Anna England, Van Meter	93.2
2	Frances Helen Graham, Brooklyn	92.4
3	Audrey Elizabeth Northrup, Valley Junction	91.8
4	May Messenger, Linden	91.7

Girl Twenty-four Months and Under Thirty-six Months Old—

1	Virginia Ruth Gripp, Afton	94.3
2	Mildred Louise Iverson, Stanhope	94.0
3	Arline Beatrice Hove, Stanhope	93.9
4	Mary Florence McLaughlin, Schaller	92.8

BABIES FROM ALL RURAL DISTRICTS.

Boy Twelve Months and Under Twenty-four Months Old—

1	Herbert Sutton Judkins, Indianola	96.0
2	Gerald James Adams, Wick	94.2
3	Harold George Barton, Altoona	93.1
4	Herbert Sweeney, Altoona	92.7

Boy Twenty-four Months and Under Thirty-six Months Old—

1	Harry Weldon Phillips, Altoona	92.8
2	Rollin Andrew Salisbury, Valley Junction	90.1
3	James Clark Burns, Indianola	89.7
4	Harold Eugene Sexsmith, Orient	88.2

Girl Twelve Months and Under Twenty-four Months Old—

1	Esther Louise Sexsmith, Orient	96.5
2	Barbara Isabelle Cupp, Corning	95.7
3	Geraldine Anna Jane Roth, Des Moines	94.3
4	Orrel Wilkinson, Mitchellville	94.1

Girl Twenty-four Months and Under Thirty-six Months Old—

1	Esther May Shanander, Des Moines	93.9
2	Viola Thomas, Des Moines	93.4
3	Ruth Alice Willits, Union	91.9
4	Irene Adamson, Grimes	91.6

SWEEPSTAKES.

Boy Having Highest Score—

Carroll Johnson, Des Moines	97.7

Girl Having Highest Score—

Marjorie Schuetz, Des Moines	97.4

IMPROVEMENT CLASS.

BABIES FROM RURAL DISTRICTS.

Boys Making Greatest Gain—

		1915	1916	Gain
1	Marshall Morris Applegate, Des Moines	79.9	87.2	7.3
		1915	1916	Gain
2	Clifford Scott Applegate, Cambridge	82.2	86.7	4.5

Girls Making Greatest Gain—

None.

BABIES FROM CITIES AND TOWNS LESS THAN 10,000.

Boys Making Greatest Gain—

	1915	1916	Gain
Wendell Hobart Diebel, Jefferson	92.2	93.1	.9

Girls Making Greatest Gain—

		1915	1916	Gain
1	Mary Frances McLaughlin, Schaller	92.6	92.8	2.
2	Mildred Louise Iverson, Stanhope	93.9	94.0	.1

BABIES FROM CITIES OVER 10,000.

Boys Making Greatest Gain—

		1915	1916	Gain
1	Judson Bosley Crawford, Des Moines	89.3	94.0	4.7
2	Frank LeRoy Conkling, Des Moines	91.9	96.1	4.2
3	Jack Welsh, Jr., Des Moines	90.7	94.0	3.3
4	Robert James Cook, Des Moines	90.15	93.4	3.25

Girls Making Greatest Gain—

		1915	1916	Gain
1	Elizabeteh Dixson Ricketts, Des Moines	86.5	93.4	6.9
2	Maxine Stout, Des Moines	89.6	93.0	3.4
3	Alice Jeanette Olander, Des Moines	94.3	96.8	2.5
4	Marjorie Schuetz, Des Moines	97.2	97.4	.2

CHAMPIONSHIPS.

Boy Showing Greatest Improvement Over Last Year—

Marshall Morris Applegate, Des Moines	7.3

Girl Showing Greatest Improvement Over Last Year—

Elizabeth Dixson Ricketts, Des Moines

STATE FAIR SPELLING CONTEST.

First, Irene Srugies, Greene; second, Irene Haas, St. Ansgar; third, Helen Swan, Mt. Pleasant; fourth, Donald McCammond, Coin; fifth, Edna Tisdale, Brooklyn; sixth, Vera Sadler, Creston; seventh, Reta Hanson, Williamsburg; eighth, Mildred Whithorn, Kellerton; ninth, Elma Wilson, Lucas; tenth, Mae Brown, Osceola; eleventh, Mae Rake, Corydon; twelfth, Katie Dockendorf, New Hampton; thirteenth, Alice Bushby, Fairbanks; fourteenth, Mabel Harrison, Cincinnati.

BUTTER AND CHEESE AWARDS.

JUDGES: C. W. STEPHENSON, L. L. FLICKINGER, H. E. FORRESTER.

CREAMERY BUTTER, CREAM CLASS.

Exhibitor	Score
J. H. Pakken, Ridgeway	96
E. A. Gudvangen, Hanlontown	95¾
J. H. Hagen, Joice	94¾
H. C. Stendel, Scarville	94½
M. P. Christensen, Algona	94
C. W. Green, Hartley	94
Henry Hansen, R. No. 1, Graettinger	94
F. C. Hinze, Manly	94
M. A. Nielsen, Lake Benton, Minn	94
F. D. Warner, Northwood	94
J. Christensen, Riceville	93½
Chris. Lundhoy, Greenfield	93½
Ray A. Trebil, Cylinder	93½
D. L. Driver, Whittemore	93
C. N. Hart, Plymouth	93
Ross J. Saveraid, Iowa City	93
R. D. Sweet, Allison	93
Aug. M. Hein, Hull	92½
P. W. Johnson, Bode	92½
H. Soballe, Owasa	92½
Peter Thuesen, Kimballton	92½
Chris L. Bertram, Exira	92
C. R. Conway, Garner	92
Farmers' Creamery Co., Lime Springs	92
Wm. Matters, Graettinger	92
J. T. Ryan, Adair	92
P. Windfeldt, Audubon	92
Chris. Jessen, State Center	91½
John P. Whelan, Elma	91½
J. C. Jensen, Ringsted	91
C. B. Petersen, Exira	91
Geo. Wick Roland	91
C. F. Bollig, Fenton	90½
Hartman Anderson, Cedar Falls	90
Wm. H. Gehrls, Hospers	90
Wm. Helgason, Lone Rock	90
F. J. Koch, Des Moines	90
M. V. Frederickson, Clemons	89½
D. W. Mohler, New Hampton	88
Average score of creamery butter, cream class	92.4

CREAMERY BUTTER, WHOLE MILK CLASS.

F. W. Bremer, Sumner	95½
J. J. Brunner, Strawberry Point	95¼
E. M. Guiney, Tripoli	95
D. T. Broers, Stanley	94¼
G. A. Hanson, Oelwein	94
M. E. McMurray, Jesup	94
C. J. Meier, Waverly	94
A. H. Bentz, R. No. 1, Oelwein	93½
Carl Hovland, Lake Mills	93½
H. H. Jensen, Clarks Grove, Minn	93½
J. J. Jensen, Copas, Minn	93½
E. C. Kamass, Fairbank	93½
H. C. Koeneke, Tripoli	93½
H. C. Ladage, Plainfield	93½
E. E. Mittlestadt, Arlington	93½

J. T. Mogle, Lawler	93½
John W. Sadler, Oelwein	93½
J. W. Wedemeyer, Waverly	93½
F. D. Daniels, Shell Rock	93
W. P. Hughes, Dunkerton	93
R. Jorgensen, Alta Vista	93
Erve A. Cole, Lamont	92½
Henry Piegors, Denver	92
Chris. Russler, Fredericksburg	92
L. L. Zbornik, Sumner	92
Rick L. Alderson, Sumner	91
Average score of creamery butter, whole milk class	93.4

DAIRY BUTTER.

Mrs. Otto Rasmussen, Altoona	94
Mrs. Wm. Kile, Ankeny	93
Mrs. J. A. Peters, Ankeny	92½
Mrs. L. F. Randolph, Ankeny	92
Mrs. O. O. Lomen, Decorah	91½

CHEESE.

H. A. Kalk, Sheboygan Falls, Wis	94
Leonard Cristiani, Des Moines	93
P. W. Knudson, Barneveld, Wis	92½

AGRICULTURAL AWARDS.

F. E. Sheldon, Superintendent, Mount Ayr.

CORN.

JUDGES......WILLARD ZELLER, Cooper, Iowa; P. C. TAFF, Ames, Iowa

NORTHERN DISTRICT.

Ten Ears, Yellow—First, J. Fred Bunk, Sheldon; second, Harker Ellsworth, Spirit Lake; third, Louries Johnson, Clermont; fourth, H. U. Arthur & Sons, Spirit Lake; fifth, Isaac Johnson, West Union.

Ten Ears, White—First, G. W. Peterson, Burt; second, J. C. Mowdsley, Irvington; third, R. W. Butterfield, Irvington; fourth, A. M. Avery, Mason City; fifth, Frank Harker, Milford; sixth, Ellsworth Harker, Spirit Lake.

Single Ear, Yellow—First, J. Fred Bunk, Sheldon; second, Isaac Johnson, West Union; third, Louries Johnson Clermont; fourth, R. W. Butterfield, Irvington; fifth, Ellsworth Harker, Spirit Lake.

Single Ear, White—First, G. W. Peterson, Burt; second, J. C. Mowdsley, Irvington; third, Frank Harker, Milford; fourth, A. M. Avery, Mason City; fifth, Ellsworth Harker, Spirit Lake.

NORTH CENTRAL DISTRICT.

Ten Ears Yellow—First, Lloyd Johnson, Gowrie; second, E. B. Glenney, Union; third, J. W. Eral, West Ft. Dodge; fourth, Emanuel Peterson, Harcourt; fifth, J. W. Bennett, Janesville; sixth, Henry George, West Union; seventh, A. E. Johnson, Laurens; eighth, P. M. Peterson, Cherokeee; ninth, H. F. Carley, Maynard.

Ten Ears White—First, J. W. Eral, West Ft. Dodge; second, P. M. Peterson, Cherokee; third, Henry George, West Union; fourth, Martin E. Youngdale, Gowrie; fifth, M. B. Herold, Oelwein; sixth, Emanual Peterson, Harcourt; seventh, H. A. McCaffree, Janesville; eighth, E. B. Glenney, Union.

Single Ear Yellow—First, J. W. Eral, West Ft. Dodge; second, P. M. Peterson, Cherokee; third, C. K. Greer, Monticello; fourth, Henry George; West Union; fifth, Emanual Peterson, Harcourt; sixth, Lloyd Johnson, Gowrie.

Single Ear White—First, C. K. Greer, Monticello; second, Henry George, West Union; third, J. W. Eral, West Ft. Dodge; fourth, Emanual Peterson, Harcourt; fifth, Martin E. Youngdale, Gowrie; sixth, H. A. McCaffree, Janesville.

SOUTH CENTRAL DISTRICT.

Ten Ears Yellow—First, John Finnegan, Monteith; second, Tom Finnegan, Monteith; third, Victor Felter, Des Moines; fourth, Carl Holden, Williamsburg; fifth, W. O. Knapp, Guthrie Center; sixth, Fred McCulloch, Hartwick; seventh, I. E. Proudfit, Altoona; eighth, Roy E. Proudfit, Altoona; ninth, Chas. Brunker, Blencoe; tenth, C. W. Packer, Altoona.

Ten Ears White—First, W. O. Knopp, Monteith; second, W. T. Jack, Lisbon; third, John Finnegan, Monteith; fourth, Earle Knopp, Monteith; fifth, C. K. Greer, Monticello; sixth, Roy Kohl, Lisbon; seventh, Victor Felter, Des Moines; eighth, J. O. Fudge, Atlantic. ninth, Wm. Danner, Dallas Center; tenth, J. M. Williamson, Des Moines.

Single Ear Yellow—First, H. N. Webster, Runnells; second, Carl Holden, Williamsburg; third, John Finnegan, Monteith; fourth, Victor Felter, Des Moines; fifth, C. C. Eggert, Newton; sixth, Fred McCulloch, Hartwick; seventh, G. O. Doggry, Ankeny; eighth, Chas. Brunker, Blencoe; ninth, I. E. Proudfit, Altoona; tenth, W. McClanahan, Mitchellville.

Single Ear White—First, Tom Finnegan, Monteith; second, G. T. McCammon, Ames; third, John Finnegan, Monteith; fourth, Wm. Danner, Dallas Center; fifth, W. O. Knopp, Monteith; sixth, Earl Knopp, Monteith; seventh, Roy Kohl, Lisbon, eighth, Victor Felter, Des Moines.

SOUTHERN DISTRICT.

Ten Ears Yellow—First, E. L. Reed, New London; second, Wayne W. Polk, Sidney; third, Amos Bailey, Unionville; fourth, R. Harold Reed, New London; fifth, Mack Utterback, Sigourney; sixth, R. H. Krizer, Rose Hill; seventh, J. H. Petty, Elliott; eighth, Ray Redfern, Yarmouth; ninth, Arch Huston, Olds; tenth. Bolick Bros., Danville.

Ten Ears White—First, Wayne W. Polk, Sidney; second, W. W. Ettleman, Sidney; third, E. L. Reed, New London; fourth, Guy McCannon, Merna; fifth, Amos Bailey, Unionville; sixth, Arch Huston, Olds; seventh, Ephram Young, Bloomfield; eighth, T. C. Van Eaton, Thurman; ninth, J. H. Petty, Elliott; tenth, S. A. Shetterley, Hartford.

Single Ear Yellow—First, Krizer Bros., Eddyville; second, Arch Huston, Olds; third, Victor Pierrot, Wever; fourth, A. H. Bakehouse, Sigourney; fifth, Grant Horton, Brighton; sixth, Wayne W. Polk, Sidney; seventh, Wickfield Farm, Cantril; eighth, Guy McCannon, Merna; ninth, E. L. Reed, New London; tenth, J. F. Warner, Bloomfield.

Single Ear White—First, L. H. Alexander, Fairfield; second, E. L. Reed, New London; third, Grant Horton, Brighton; fourth, Wayne W. Polk, Sidney; fifth, T. C. Van Eaton, Thurman; sixth, Amos Bailey, Unionville; seventh, Arch Huston, Olds; eighth, Guy McCannon, Merna.

NORTHERN AND CENTRAL DISTRICT.

Ten Ears Other Than Yellow or White—First, Henry George, West Union; second, P. M. Peterson, Cherokee; third, Emanual Peterson, Harcourt.

Single Ear Other Than Yellow or White—First, Henry George, West Union, second, P. M. Peterson, Cherokee; third, Emanual Peterson, Harcourt.

SOUTH CENTRAL AND SOUTHERN DISTRICTS.

Ten Ears Other Than Yellow or White—First, Guy Coon, Carlisle; second, W. F. Otcheck, Grinnell; third, J. C. Ash, Norwalk; fourth. Victor Felter, Des Moines; fifth, P. M. Parsons. Carlisle.

Single Ear Other Than Yellow or White—First, Arch Huston, Olds; second, Grant Horton, Brighton; third, E. L. Reed, New London; fourth, W. F. Otcheck, Grinnell; fifth, Victor Felter, Des Moines.

SWEEPSTAKES.

Ten Ears Yellow—E. L. Reed, New London
Ten Ears White—Wayne W. Polk, Sidney.
Ten Ears Other Than Yellow or White—Guy Coon, Carlisle.
Single Ear Yellow—Krizer Bros., Eddyville.
Single Ear, Any Variety—L. H. Alexander, Fairfield.
Single Ear Other Than Yellow or White—Arch Huston, Olds.

GRAND SWEEPSTAKES.

Ten Ears. Any Variety—Wayne W. Polk, Sidney.
Single Ear, Any Variety—L. H. Alexander, Fairfield.

SWEET CORN OR POP CORN.

Ten Ears Small Early Sweet Corn—First, J. L. Todd, Des Moines; second, C. E. Malone, Atlantic; third, J. M. Williamson, Des Monies; fourth, H. J. Keil, Ankeny; fifth, Bert Coppock, Ankeny.

Ten Ears Late Sweet Corn—First, L. H. Alexander, Fairfield; second, G. T. McCannon, Ames; third, W. F. Otcheck, Grinnell; fourth, Ellsworth Harker, Spirit Lake; fifth, Wib F. Clements, Agency.

Ten Ears White Rice Pop Corn—First, W. F. Otcheck, Grinnell; second, E. M. Wilson, Panora; third, D. W. Brons, Sigourney; fourth, Chas. Brunker, Blencoe; fifth, J. W. Pearson, Mitchellville.

Ten Ears Any Other Variety Pop Corn—First, Clark Bros., Albia; second, W. F. Otcheck, Grinnell; third, J. L. Todd, Des Moines; fourth, J. M. Williamson, Des Moines; fifth, Mrs. James Grinstead, Mitchellville.

GRAIN AND SEEDS.

JUDGES......L. L. BURNETT, Ames, Iowa; H. L. EICHLING Ames, Iowa

Winter Wheat—First, Carl Holden, Williamsburg; second, Harry Groves, Williamsburg; third, A. W. Hitchcock, Ankeny; fourth, W. F. Lyon, Pleasantville; fifth, F. O. Heinseley, Ankeny; sixth, J. U. Walker, Swan.

Spring Wheat—First, Carl Holden, Williamsburg; second, W. F. Otcheck, Grinnell; third, Jno. Justice, Ankeny; fourth, W. F. Lyon, Pleasantville; fifth, Harry Groves, Williamsburg; sixth, Emanual Peterson, Harcourt.

Small Early Oats—First, O. A. Decker, Altoona; second, E. L. Pearson, Mitchellville; third, H. U. Arthur &Sons, Spirit Lake; fourth, Harry Groves, Williamsburg; fifth, W. J. Irving, Webster City; sixth, J. C. Eggert, Newton

Swedish Type Oats—First, W. F. Otcheck, Grinnell; second, H. O. Wallace, Pleasantville; third, C. E. Malone, Atlantic; fourth, Andrew Keisch, Carroll; fifth, Ellsworth Harker, Spirit Lake; sixth, Frank Harker, Milford.

Silver Mine Type Oats—First, Silvis H. Stamm, Orillia; second, Frank Kouba, Blairstown; third, Carl Holden, Williamsburg; fourth, Harry Groves, Williamsburg; fifth, G. O. Doggy, Ankeny; sixth, A. W. Hitchcock, Ankeny.

Large Colored Oats—First, W. F. Otcheck, Grinnell; second, Andrew Keisch, Carroll; third, A. M. Avery, Mason City.

Rye—First, Andrew Keisch, Carroll; second, Carl Holden, Williamsburg; third, J. U. Walker, Swan; fourth, J. F. Walner, Bloomfield; fifth, Ray Redfern, Yarmouth; sixth, Harry Groves, Williamsburg.

Barley—First, Silvis H. Stamm, Orillia; second, W. F. Otcheck, Grinnell; third Fred McCulloch, Hartwick; fourth, Andrew Keisch, Carroll; fifth, C. K. Greer, Monticello; sixth, E. H. Rodell, Avon.

Speltz—First, W. F. Otcheck, Grinnell; second, J. L. Todd, Des Moines; third, Silvis H. Stamm, Orillia; fourth, C. E. Malone, Atlantic.

Buckwheat—First, J. L. Todd, Des Moines; second, Clyde Stuart, Altoona; third, Clark Bros., Albia.

Timothy Seed—First, J. E. Cromwell, Ankeny; second, Harry Groves, Williamsburg; third, C. E. Malone, Atlantic; fourth, J. E. Warner, Bloomfield; fifth, Ray Redfern, Yarmouth.

Red Clover Seed—First, Ray Redfern, Yarmouth; second, J. W. Freel, Pleasantville; third, Carl Holden, Williamsburg; fourth, Andrew Keisch, Carroll; fifth, Ralph Hunter, Atlantic.

Millet Seed—First, Clark Bros., Albia; second, C. E. Malone, Atlantic.

Flax Seed—J. L. Todd, Des Moines; second, C. E. Malone, Atlantic.

GRASS AND FORAGE.

JUDGES......L. C. BURNETT, Ames, Iowa; H. L. EICHLING, Ames, Iowa

Timothy Sheaf (Hay)—First, W. F. Otcheck, Grinnell; second, C. E. Malone, Atlantic; third, Walter H. Plows, Chariton.

Red Top Sheaf (Hay)—First, August Bruns & Sons, Sigourney; second, J. U. Walker, Swan; third, A. H. Bakehouse, Sigourney.

Medium Red Clover Sheaf (Hay)—First, W. F. Otcheck, Grinnell; second, C. E. Malone, Atlantic; third, Ray Redfern, Yarmouth.

Mammouth Red Clover Sheaf (Hay)—First, Walter H. Plows, Chariton; second, A. L. Plummer, Altoona; third, C. E. Malone, Atlantic.

Alsike Clover Sheaf (Hay)—First, W. E. Utterback, Sigourney; second, W. F. Otcheck, Grinnell; third, Carl Holden, Williamsburg.

Alfalfa Clover Sheaf (Hay)—First, E. M. Wilson, Panora; second, S. F. Suinitt, Muscatine; third, Jno. Justice, Ankeny.

Millet Sheaf (Hay)—W. F. Otcheck, Grinnell; second, C. E. Malone, Atlantic; third, Bolick Bros., Danville.

Blue Grass Sheaf (Hay)—First, Silvis H. Stamm, Orillia; second, H. A. McCaffree, Janesville; third, Walter H. Plows, Chariton.

SHEAF GRAIN.

JUDGES......L. C. BURNETT, Ames, Iowa; H. L. EICHLING, Ames, Iowa

Wheat in Straw (Spring)—First, August Bruns & Sons, Sigourney; second, W. F. Otcheck, Grinnell; third, Carl Holden, Williamsburg.

Wheat in Straw (Winter)—First, Jno. Justice, Ankeny; second, W. F. Otcheck, Grinnell; third, H. A. McCaffree, Janesville.

Barley in Straw—First, W. F. Otcheck, Grinnell; second, Silvis H. Stamm, Orillia; third, August Bruns & Sons, Sigourney.

Oats in Straw (Early)—First, W. F. Otcheck, Grinnell; second, A. H. Bakehouse, Sigourney; third, August Bruns & Sons, Sigourney.

Oats in Straw (Late)—First, Frank Kouba, Blairstown; second, W. F. Otcheck, Grinnell; third, Silvis H. Stamm, Orillia.

Rye in Straw—First, W. F. Otcheck, Grinnell; second, A. H. Bakehouse, Sigourney; third, H. A. McCaffree, Janesville.

Flax for Seed—First, E. M. Wilson, Panora; second, W. F. Otcheck, Grinnell; third, C. E. Malone, Atlantic.

Ripe Millet for Seed—First, C. E. Malone, Atlantic; second, Jno. Justice, Ankeny; third, J. T. Wasson, Panora.

Speltz—First, W. F. Otcheck, Grinnell; second, August Bruns & Sons, Sigourney; third, Silvis H. Stamm, Orillia.

Timothy Sheaf (for seed)—First, W. F. Otcheck, Grinnell; second, Ray Redfern, Yarmouth; third, Walter H. Plows, Chariton.

Blue Grass Sheaf (seed)—First, W. F. Otcheck, Grinnell; second, C. E. Malone, Atlantic; third, Geo. H. Scheurman, Mt. Pleasant.

POTATOES.

JUDGE..............................WALTER H. PLOWS, Chariton, Iowa

Early Ohio—First, G. T. McCannon, Ames; second, Sestier Bros., Des Moines; third, A. E. Johnson, Laurens; fourth, J. M. Person, Runnells; fifth, John Altman, Altoona.

Bliss Triumph—First, Chas. M. Pink, Altoona; second, W. E. Utterback, Sigourney; third, W. F. Otcheck, Grinnell; fourth, Sestier Bros., Des Moines; fifth, Willard Zellar, Jefferson.

Irish Cobbler—First, August Bruns & Sons, Sigourney; second, Cyrus E. Harvey, Altoona; third, Willard Zellar, Jefferson; fourth, Sestier Bros., Des Moines; fifth, E. L. Reed, New London.

Seneca Beauty—First, A. L. Plummer, Altoona; second, W. F. Otcheck, Grinnell; third, W. E. Utterback, Sigourney; fourth, Sestier Bros., Des Moines; fifth, J. M. Henderson, Des Moines.

Bonanza—First, W. F. Otcheck, Grinnell; second, W. E. Utterback, Sigourney; third, Sestier Bros., Des Moines; fourth, Chas. M. Pink, Altoona.

Rural New Yorker—First, T. R. Douglass, Ames; second, A. L. Plummer, Altoona; third, W. E. Utterback, Sigourney; fourth, Willard Zellar, Jefferson; fifth, Jas. Hethershaw, Des Moines.

Burbank—First, W. E. Utterback, Sigourney; second, Chas. M. Pink, Altoona; third, A. L. Plummer, Altoona; fourth, W. F. Otcheck, Grinnell; fifth, Jas. Hethershaw, Des Moines.

Red Jersey Sweet Potato—First, Chas. M. Pink, Altoona; second, Jas. Hethershaw, Des Moines; third, Sestier Bros., Des Moines.

Yellow Sweet Potato—First, Sestier Bros., Des Moines; second, Jas. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

White Sweet Potato—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines; third, G. T. McCannon, Ames.

Best tray each meritorious variety not listed above—First, Cyrus E. Harvey, Altoona; second, Jas. Hethershaw, Des Moines.

Early Peach Blow—First, J. L. Todd, Des Moines.

Beauty of Hebron—First, Clark Bros., Albia.

MISCELLANEOUS.

Collection to consist of at least ten varieties—First, W. E. Utterback, Sigourney; second, Chas. M. Pink, Altoona; third, Willard Zellar, Jefferson; fourth August Bruns & Sons, Sigourney; fifth, Sestier Bros., Des Moines.

SWEEPSTAKE.

Best Tray Potatoes, Any Variety—August Bruns & Sons, Sigourney.

FIELD OR STOCK VEGETABLES.

JUDGE..............................WALTER H. PLOWS Chariton, Iowa

Beets, white sugar (six specimens)—First, H. Rollinson, Des Moines; second, Jas. Hethershaw, Des Moines; third, Sestier Bros., Des Moines.

Beets, Mangel-Wurzels (three specimens)—First, H. Rollinson, Des Moines; second, A. L. Plummer, Altoona; third, Jas. Hethershaw, Des Moines.

Beets, any other variety (six specimens)—First, Sestier Bros., Des Moines; second, A. L. Plummer, Altoona; third, H. Rollinson, Des Moines.

White carrots for stock (six specimens)—First, A. L. Plummer, Altoona; second, Sestier Bros., Des Moines; third, Jas. Hethershaw, Des Moines.

Pumpkins, ripe field (three specimens)—First, A. L. Plummer, Altoona; second, Jas. Hethershaw, Des Moines; third, Sestier Bros., Des Moines.

Rutabagas, for stock, any variety (six specimens)—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines; third, Sestier Bros., Des Moines.

Squash, for stock (three specimens)—First, Perry S. Brunk, Altoona; second, C. W. Packer, Altoona; third, Sestier Bros., Des Moines.

Turnips, for stock (six specimens)—First, Sestier Bros., Des Moines; second, Jas. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

Largest pumpkin—First, A. L. Plummer, Altoona; second, H. Rollinson, Des Moines; third, Jas. Hethershaw, Des Moines.

Largest Squash—First, C. W. Packer, Altoona; second, Sestier Bros., Des Moines; third, Cyrus E. Harvey, Altoona.

Largest White Carrot—First, A. L. Plummer, Altoona; second, W. McClanahan, Mitchellville; third, Jas. Hethershaw, Des Moines.

Largest Beet (Mangel-Wurzel)—First, G. T. McCannon, Ames; second, H. Rollinson, Des Moines; third, A. L. Plummer, Altoona.

Largest Turnip—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines; third, Sestier Bros., Des Moines.

VEGETABLE ROOT CROP.

JUDGE............................WALTER H. PLOWS, Chariton, Ia.

Red Globe Onions, one dozen—First H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, G. T. McCannon, Ames.

White Globe Onions, one dozen—First, H. Rollinson, Des Moines; second, Jas Hethershaw, Des Moines; third, Sestier Bros., Des Moines.

Yellow Globe Onions, one dozen—First, H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, Jas. Hethershaw, Des Moines.

Twelve Largest Onions, any variety—First, J. L. Todd, Des Moines; second, Sestier Bros., Des Moines.

Best One Dozen Onions not name above—First, Sestier Bros., Des Moines; second, J. L. Todd, Des Moines; third, H. Rollinson, Des Moines.

Turnips, one-half dozen—First, G. T. McCannon, Ames; second, Cyrus E. Harvey, Altoona; third, Sestier Bros., Des Moines.

Rutabaga Turnips, one-half dozen Yellow Flesh—First, H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, A. L. Plummer, Altoona.

Parsnips, one-half dozen—First Sestier Bros., Des Moines; second, J. L. Todd, Des Moines; third, G. T. McCannon, Ames.

Carrots, for table use, one-half dozen—First, Jas. Hethershaw, Des Moines; second, Clark Bros., Albia; third, G. T. McCannon, Ames.

Beets for table use, one-half dozen—First, H. Rollinson, Des Moines; second, T. R. Douglass, Ames; third, Cyrus E. Harvey, Altoona.

Vegetable Oysters, one-half dozen—First, J. L. Todd, Des Moines; second, Clark Bros., Albia; third, Chas. M. Pink, Altoona.

TABLE VEGETABLES.

JUDGE............................WALTER H. PLOWS, Chariton, Ia.

One Quart Shelled Ground Cherries—First, Cyrus E. Harvey, Altoona; secon, Sestier Bros., Des Moines; third, E. Heyden, Mitchellville.

Beans, Pole Lima, shelled (one quart)—First, H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, Ed. Stuart, Altoona.

Beans, Henderson's Bush Lima, shelled (one quart)—First, A. L. Plummer, Altoona; second Cyrus E. Harvey, Altoona; third, J. L. Todd, Des Moines.

Beans, White Navy, shelled (one quart)—First, H. Rollinson, Des Moines; second, Cyrus E. Harvey, Altoona; third, Sestier Bros., Des Moines.

Cabbage, Early Jersey Wakefield (three heads)—First, Sestier Bros., Des Moines; second, G. T. McCannon, Ames; third, Jas. Hethershaw, Des Moines.

Cabbage, Late (three heads)—First, Cyrus E. Harvey, Altoona; second, G. T. McCannon, Ames; third, Sestier Bros., Des Moines.

Cabbage, Red (three heads)—First, Sestier Bros., Des Moines; second, Jas. Hethershaw, Des Moines; third, Chas. M. Pink, Altoona.

Cabbage, Savoy (three heads)—First, Sestier Bros., Des Moines; second, Jas. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

Cabbage (three heaviest heads)—First, Sestier Bros., Des Moines; second, Jas. Hethershaw, Des Moines; third, J. L. Todd, Des Moines.

Cauliflower (three heads)—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines.

Cucmbers, Ripe (three specimens)—First, Sestier Bros., Des Moines; second, Jas. Hethershaw, Des Moines; third, J. E. Cornwell, Ankeny.

Cucumbers, for slicing (three specimens)—First, H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, Cyrus E. Harvey, Altoona.

Celery, Red, roots attached (six stalks)—First, H. Rollinson, Des Moines; second, Jas. Hethershaw, Des Moines.

Celery, White, roots attached (six stalks)—First, H. Rollinson, Des Moines; second. Jas. Hethershaw, Des Moines; third, J. L. Todd, Des Moines.

Egg Plants (three specimens)—First, Cyrus E. Harvey, Altoona; second, Mrs. Geo. M. Grinstead, Mitchellville; third, Sestier Bros., Des Moines.

Kohl Rabi (three heads)—First, Cyrus E. Harvey, Altoona; second, Sestier Bros., Des Moines; third, T. R. Douglass, Ames.

Muskmelons, green fleshed (three specimens)—First, Cyrus E. Harvey, Altoona; second, H. Rollinson, Des Moines; third, Chas. M. Pink, Altoona.

Muskmelons, salmon fleshed (three specimens)—First, Jas. Hethershaw, Des Moines; second, J. L. Todd, Des Moines; third, Clark Bros., Albia.

Peppers, Green Mango (twelve specimens)—First, Cyrus E. Harevy, Altoona; second, G. T. McCannon, Ames; third, Sestier Bros., Des Moines.

Peppers, Red Mango (twelve specimens)—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines; third, Sestier Bros., Des Moines.

Peppers, Red (twelve specimens)—First, H. Rollinson, Des Moines; second, G. T. McCannon, Ames; third, J. L. Todd, Des Moines.

Peppers, Red Cayenne (twelve specimens)—First, H. Rollinson, Des Moines; second, Jas. Hethershaw, Des Moines; third, J. L. Todd, Des Moines.

Pumpkin, Ripe Sweet (one specimen)—First, H. Rollinson, Des Moines; second, Jas. Hethershaw, Des Moines; third, Sestier Bros., Des Moines.

Rhubarb, for table use (six stalks)—First, Jas. Hethershaw, Des Moines; second, Sestier Bros., Des Moines; third, H. Rollinson ,Des Moines.

Squash, Boston Marrow (three specimens)—First, Sestier Bros., Des Moines; second, H. Rollinson, Des Moines; third, Jas. Hethershaw, Des Moines.

Squash, Crook Neck (three specimens)—First, Sestier Bros., Des Moines; second, Cyrus E. Harvey, Altoona; third, G. T. McCannon, Ames.

Squash, Essex Hybrid (three specimens)—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines; third, Chas. M. Pink, Altoona.

Squash, Hubbard (three specimens)—First, J. A. Mason, Carlisle; second, H. Rollinson, Des Moines; third, Sestier Bros., Des Moines.

Squash, Marblehead (three specimens)—First, Sestier Bros., Des Moines; second, J. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

Squash, Mammoth (one specimen)—First, Ed. Stuart, Altoona; second, Clyde Stuart, Altoona, third, C. W. Packer, Altoona.

Squash, Sibley (three specimens)—First, Sestier Bros., Des Moines; second, H. Rollinson, Des Moines.

Tomatoes, Red (twelve specimens)—First, Cyrus E. Harvey, Altoona; second, Jas. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

Tomatoes, Purple (twelve specimens)—First, J. L. Todd, Des Moines; second, Clark Bros., Albia; third, Cyrus E. Harvey, Altoona.

Tomatoes, Yellow (twelve specimens)—First, Jas. Hethershaw, Des Moines; second, H. Rollinson, Des Moines; third, G. T. McCannon, Ames.

Tomatoes, largest any variety (twelve specimens)—First, H. Rollinson, Des Moines; second, J. L. Todd, Des Moines; third, Jas. Hethershaw, Des Moines.

Watermelons (two specimens)—First, J. V. Walker, Swan; second, Jas. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

VEGETABLE DISPLAYS.

JUDGE............................WALTER H. PLOWS, Chariton, Ia.

Display of Onions to consist of not less than five varieties of five specimens each—First, H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, Jas. Hethershaw, Des Moines.

Display of Tomatoes to consist of not less than five varieties of five specimens each—First, Cyrus E. Harvey, Altoona; second, Jas. Hethershaw, Des Moines; third, H. Rollinson, Des Moines.

Display of Peppers to consist of not less than five varieties of five specimens each—First, H. Rollinson, Des Moines; second, Jas. Hethershaw, Des Moines; third, Sestier Bros., Des Moines.

VEGETABLE SWEEPSTAKES.

JUDGE............................WALTER H. PLOWS, Chariton, Ia.

First, H. Rollinson, Des Moines; second, Sestier Bros., Des Moines; third, Jas. Hethershaw, Des Moines; fourth, Cyrus E. Harvey, Altoona; fifth, A. L. Plummer, Altoona.

INDIVIDUAL FARM EXHIBITS.

JUDGE............................VICTOR FELTER De Soto, Ia. and
P. C. TAFF, Ames, Iowa.

Exhibit from farm containing eighty acres or less—First, A. H. Bakehouse, Sigourney, score 877; second, H. F. Lyon, Pleasantville, 849; third, C. E. Malone, Atlantic, 846; fourth, Walter H. Plows, Chariton, 800; fifth, J. T. Wasson, Panora, 798; sixth, E. R. Hem, Selma, 730.

Exhibit from farm containing over eighty acres—First, August Bruns & Sons, Sigourney, 879; second, W. E. Utterback, Sigourney, 846; third, W. F. Otcheck, Grinnell, 833; fourth, J. V. Walker, Swan, 826; fifth, S. A. Shetterly, Hartford, 808; sixth, J. V. Walker, Swan, 805; seventh, Fred McCulloch, Hartwick, 801; eighth, W. F. Miller & Sons, Fairfield, 800; ninth, P. M. Peterson, Cherokee, 760; tenth, H. U. Arthur & Sons, Spirit Lake, 741; eleventh, H. A. McCaffree, Janesville, 688.

Exhibit Within Polk County—First, Chas. O. Garrett, Des Moines, 835; second, John Justice, Ankeny, 834; third, J. L. Plummer, Altoona, 818; fourth, J. E. Cromwell, Ankeny, 740.

COUNTY EXHIBITS.

JUDGE........................FRED HETHERSHAW, Des Moines, Ia.

South Central District—First, Muscatine, 955; second, Jasper, 929; third, Clinton, 914; fourth, Linn, 912; fifth, Scott, 903; sixth, Greene, 900.

Southern District—First, Henry, 951; second, Des Moines, 930; third, Lucas, 910; fourth, Cass, 899; fifth, Montgomery, 898; sixth, Wayne, 750.

Sweepstakes for Southern and South Central Districts—Henry.

Sweepstakes for the highest scoring County Exhibit—Muscatine.

Sweepstakes—Most attractive, best decorated and best arranged exhibit—Tie, Des Moines and Henry.

FRUIT AWARDS.

APPLES.

NORTHERN DISTRICT.

JUDGE............................J. W. MURPHY, Glenwood, Iowa.

Collection, not less than twenty varieties or more than fifty—First, A. R. Toothaker, Sioux City; second, W. C. Marcue, LeMars; third, C. H. True, Edgewood.

Four varieties, summer—First, W. C. Marcus, LeMars; second, C. H. True, Edgewood; third, A. R. Toothaker, Sioux City.

Six varieties, fall—First, A R. Toothaker, Sioux City; second, C. H. True, Edgewood, third, W. C. Marcue, LeMars.

Six varieties, winter—First, A. R. Toothaker, Sioux City; second, C. H. True, Edgewood; third, P. M. Peterson, Cherokee.

CENTRAL DISTRICT.

JUDGE...................................R. S. HERRICK, Ames, Iowa.

Collection, not less than twenty varieties or more than fifty—First, E. O. Worth, Mondamin; second, F. O. Harrington, Williamsburg; third, M. J. Worth, Mondamin.

Four varieties, summer—First, F. O. Harrington, Williamsburg; second, M. J. Worth, Mondamin; third, E. O. Worth, Mondamin

Six varieties, fall—First, M. J. Worth, Mondamin; second, F. O. Harrington, Williamsburg; third, F. V. Metcalf, Mondamin.

Six varieties, winter—First, F. O. Harrington, Williamsburg; second, M. J. Worth, Mondamin; third, E. O. Worth, Mondamin.

CAPITAL DISTRICT.

Judge..............................F. M. Harrington, Ames, Iowa

Collection, not less than twenty varieties or more than fifty—First, Chas. O. Garrett, Des Moines; second, Cyrus E. Harvey, Altoona; third, Robert M. Clark, Mitchellville.

Four varieties, summer—First, Chas. O. Garrett, Des Moines; second, Ewing Farms, Des Moines; third, Halford Garrett, Altoona.

Six varieties, fall—First, Robert M. Clark, Mitchellville; second, Halford Garrett, Altoona; third, Ewing Farms, Des Moines.

Six varieties, winter—First, Robert M. Clark, Mitchellville; second, Chas. O. Garrett, Des Moines; third, Cyrus E. Harvey, Altoona.

SOUTHERN DISTRICT.

Judge..............................R. S. Herrick, Ames, Iowa.

Collection, not less than twenty varieties or more than fifty—First, A. R. Soder, Hartford; second, C. E. Mincer, Hamburg; third, W. W. Gwinn, Hartford.

Four varieties, summer—First, Mrs. Follie Mincer, Hamburg; second, W. W. Gwinn, Hartford; third, C. E. Mincer, Hamburg.

Six varieties, fall—First, W. W. Gwinn, Hartford; second, C. E. Mincer, Hamburg; third, A. R. Soder, Hartford.

Sir varieties, winter—First, A. R. Soder, Hartford; second, C. E. Mincer; third, Mrs. Follie Mincer, Hamburg.

HOME ORCHARD COLLECTION.

Judge..............................J. W. Murphy, Glenwood, Iowa.

NORTHERN DISTRICT.

First, W. C. Marcue, LeMars; second, A. R. Toothaker, Sioux City; third, P. M. Peterson, Cherokee.

CENTRAL DISTRICT.

First, E. O. Worth, Mondamin; second, M. J. Worth, Mondamin; third, F. O. Harrington, Williamsburg.

CAPITAL DISTRICT.

First, Ewing Farms, Des Moines; second, Robert M. Clark, Mitchellville; third, Cyrus E. Harvey, Altoona.

SOUTHERN DISTRICT.

First, A. R. Soder, Hartford; second, Mrs. Follie Mincer, Hamburg; third, W. W. Gwinn, Hartford.

PACKAGE COMMERCIAL APPLES.

Judges..............................J. H. Allison and
J. W. Murphy, Glenwood, Iowa.

NORTHERN DISTRICT.

First, C. H. True, Edgewood, on one variety; A. R. Toothaker, Sioux City, on two varieties; W. C. Marcue, LeMars, on four varieties; Isaac Johnson, on one variety.

Second, W. C. Marcue, LeMars, on two varieties; A. R Toothaker, Sioux City, on five varieties.

Third, A. R. Toothaker, Sioux City, on one variety; C. H. True, Edgewood, on two varieties; Kenneth Reeves, Waverly, on one variety; P. M. Peterson, Cherokee, on one variety.

Fourth, W. C. Marcue, LeMars, on one variety.

CENTRAL DISTRICT.

First, M. J. Worth, Mondamin, on three varieties; E. O. Worth, Mondamin, on six varieties; F. V. Metcalf. Mondamin, on one variety.

Second, E O. Worth, Mondamin, on two varieties; M. J. Worth, Mondamin, on five varieties; F. V. Metcalf, Mondamin, on two varieties.

Third, F. V. Metcalf, Mondamin, on five varieties; E. O. Worth, Mondamin, on two varieties.

CAPITAL DISTRICT.

First, Ewing Farms, Des Moines, on one variety; Cyrus E. Harvey, Altoona, on two varieties; Chas. O. Garrett, Des Moines, on two varieties; Robert M. Clark, Mitchellville, on five varieties.

Second, Cyrus E. Harvey, Altoona, on seven varieties; Ewing Farms, Des Moines, on one variety; Chas. O. Garrett, Des Moines, on one variety.

Third, John C. Hol, Des Moines, on one variety; Chas. O. Garrett, Des Moines, on three varieties; Ewing Farms, Des Moines, on two varieties; W. W. McHone, Ankeny, on one variety; Robert M. Clark, Mitchellville, on one variety; Cyrus E. Harvey, Altoona, on one variety.

Fourth, B. Stuart, Des Moines, on one variety; John C. Hol, Des Moines, on two varieties; Ewing Farms, Des Moines; on four varieties; Chas. O. Garrett, Des Moines, on one variety; John C. Hol, Des Moines, on one variety.

SOUTHERN DISTRICT.

First, W. W. Gwinn, Hartford, on five varieties; A. R. Soder, Hartford, on two varieties.

Second, J. F. Wellons, Indianola, on three varieties; C. E. Mincer, Hamburg, on two varieties; A. R. Soder, Hartford, on three varieties; W. W. Gwinn, Hartford, on one variety.

Third, Mrs. Follie Mincer, Hamburg, on four varieties; C. E. Mincer, Hamburg, on three varieties.

Fourth, Mrs. Follie Mincer, Hamburg, on three varieties; C. E. Mincer, Hamburg, on two varieties.

APPLES STORED FROM PREVIOUS YEAR.

Best box of apples stored from last year's crop—First, Chas. O. Garrett, Des Moines; second, C. E. Mincer, Hamburg; third, Mrs. Follie Mincer, Hamburg; fourth, Cyrus E. Harvey, Altoona.

Best plate of each of five varieties stored as above with method of storing stated, premium on each variety—First, C. E. Mincer, Hamburg, on two varieties; Mrs. Follie Mincer, Hamburg, on two varieties; Chas. O. Garrett, Des Moines, on one variety.

Second, Mrs. Follie Mincer, Hamburg, on one variety; B. Stuart, Des Moines, on three varieties; C. E. Mincer, Hamburg, on one variety.

Third, Cyrus E. Harvey, Altoona, on one variety; C. E. Mincer, Hamburg, on two varieties; Mrs. Follie Mincer, Hamburg, on two varieties.

UNNAMED SEEDLING APPLES.

JUDGE ....J. H. ALLISON.

Six specimens to constitute plate—First, J. F. Wellons, Indianola; second, P. M. Peterson, Cherokee; third, M. J. Worth, Mondamin; fourth, Cyrus E. Harvey, Altoona.

Best exhibit seedling apples—First, Cyrus E. Harvey, Altoona; second, J. F. Wellons, Indianola.

PLATES.

NORTHERN DISTRICT.

JUDGE............................J. W. MURPHY, Glenwood, Iowa.

First, W. C. Marcue, LeMars, on ten varieties; A. R. Toothaker, Sioux City, on twelve varieties; Isaac Johnson, West Union, on four varieties; C. H. True, Edgewood; on three varieties.

Second, A. R. Toothaker, Sioux City, on nine varieties; W. C. Marcue, Le Mars, on eleven varieties; Isaac Johnson, West Union, on one variety; C. H. True, Edgewood, on three varieties; Kenneth Reeves, Waverly, on two varieties; P. M. Peterson, Cherokee, on two varieties.

Third, C. H. True, Edgewood, on twelve varieties; Isaac Johnson, West Union, on six varieties; Kenneth Reeves, Waverly, on three varieties; A. R. Toothaker, Sioux City, on one variety; W. C. Marcue, LeMars, on three varieties.

CENTRAL DISTRICT.

JUDGE.................................R. S. HERRICK, Ames, Iowa

First, E. O. Worth, Mondamin, on twelve varieties; F. O. Harrington, Williamsburg, on ten varieties; M. J. Worth, Mondamin, on eight varieties.

Second, M. J. Worth, Mondamin, on thirteen varieties; E. O. Worth, Mondamin, on seven varieties; F. V. Metcalf, Mondamin, on four varieties; F. O. Harrington, Williamsburg, on four varieties.

Third, F. O. Harrington, Williamsburg, on six varieties; E. O. Worth, Mondamin, on seven varieties; F. V. Metcalf, Mondamin, on eight varieties; M. J. Worth, Mondamin, on seven varieties.

CAPITAL DISTRICT.

JUDGE.............................F. M. HARRINGTON, Ames, Iowa

First, Halford Garrett, Des Moines, on three varieties; Robert M. Clark, Mitchellville, on five varieties; B. Stuart, Des Moines, on five varieties; Cyrus E. Harvey, Altoona, on five varieties; Chas. O. Garrett, Des Moines, on seven varieties; John C. Hol, Des Moines, on one variety; Ewing Farm, Des Moines, on two varieties.

Second, Chas. O. Garrett, Des Moines, on seven varieties; Cyrus E. Harvey, Altoona, on three varieties; John C. Hol, Des Moines, on four varieties; Ewing Farm, Des Moines, on four varieties; Halford Garrett, Des Moines, on five varieties; Robert M. Clark, on three varieties; B. Stuart, Des Moines, on one variety; Victor Felter, Des Moines, on one variety.

Third, Ewing Farms, Des Moines, on one variety; Halford Garrett, Des Moines, on five varieties; John C. Hol, Des Moines, on two varieties; W. W. McHone, Ankeny, on two varieties; Chas. O. Garrett, Des Moines, on four varieties: B. Stuart, Des Moines, on four varieties; J. Christensen, Riceville, on one variety; Victor Felter, Des Moines, on one variety; Cyrus E. Harvey, Altoona, on seven varieties.

SOUTHERN DISTRICT.

JUDGE.................................R. S. HERRICK, Ames, Iowa

First, C. E. Mincer, Hamburg, on eight varieties; J. F. Wellons, Indianola, on two varieties; A. R. Soder, Hartford, on nine varieties; Mrs. Follie Mincer, on five varieties; W. W. Garvin, Hartford, on five varieties.

Second, Mrs. Follie Mincer, Hamburg, on seven varieties; C. E. Mincer, Hamburg, on seven varieties; W. W. Garvin, Hartford, on five varieties; J. F. Wellons, Indianola, on six varieties; A. R. Soder, Hartford, on four varieties.

Third, J. F. Wellons, Indianola, on five varieties; W. W. Garvin, Hartford, on four varieties; C. E. Mincer, Hamburg, on six varieties; Mrs. Follie Mincer, Hamburg, on five varieties; A. R. Soder, Hartford, on eight varieties.

CRABS.

JUDGES..............................R. S. HERRICK, Ames, Iowa, and
F. M. HARRINGTON, Ames, Iowa

NORTHERN DISTRICT.

First, P. M. Peterson, Cherokee, on one variety; A. R. Toothaker, Sioux City, on two varieties; W. C. Marcue, LeMars, on four varieties; C. H. True, Edgewood, on one variety.

Second, W. C. Marcue, LeMars, on three varieties; A. R. Toothaker, Sioux City, on four varieties; Kenneth Reeves, Waverly, on one variety.

Third, C. H. True, Edgewood, on three varieties; P. M. Peterson, Cherokee, on three varieties.

CENTRAL DISTRICT.

First, E. O. Worth, Mondamin, on three varieties; M. J. Worth, Mondamin, on three varieties; F. O. Harrington, Williamsburg, on two varieties.

Second, M. J. Worth, Mondamin, on four varieties, E. O. Worth, Mondamin, on four varieties.

Third, F. O. Harington, Williamsburg, on two varieties; E. O. Worth, Mondamin, on one variety; M. J. Worth, Mondamin, on one variety.

SOUTHERN DISTRICT.

First, J. F. Wellons, Indianola, on three varieties; C. E. Mincer, Hamburg, on one variety.

Second, C. E. Mincer, Hamburg, on two varieties; J. F. Wellons, Indianola, on one variety.

CAPITAL DISTRICT.

First, Robert M. Clark, Mitchellville, on one variety; Cyrus E. Harvey, Altoona, on five varieties; Chas. O. Garrett, Des Moines, on two varieties.

Second, Cyrus E. Harvey, Altoona, on two varieties; Chas. O. Garrett, Des Moines, on one variety; B. Stuart, Des Moines, on five varieties.

Third, B. Stuart, Des Moines, on one variety; John C. Hol, Des Moines, on two varieties; Chas. O. Garrett, Des Moines, on two varieties.

NATIVE OR HYBRID CRABS.

NORTHERN DISTRICT.

First, P. M. Peterson, Cherokee; second, Isaac Johnson, West Union.

CENTRAL DISTRICT.

First, F. O. Harrington, Williamsburg.

SOUTHERN DISTRICT.

First, J. F. Wellons, Indianola; second, C. E. Mincer, Hamburg.

CAPITAL DISTRICT.

First, John C. Hol, Des Moines; second, Cyrus E. Harvey, Altoona; third, B. Stuart, Des Moines.

PLATE DISPLAY.

JUDGE..................................F. M. HARRINGTON, Ames, Iowa

Best Ten Plates Wealthy—First, Robert M. Clark, Mitchellville; second, Chas. O. Garrett, Des Moines; third, Ewing Farms, Des Moines.

Best Ten Plate Exhibit, Each of Three Other Varieties to Be Selected—Jonathan: First, Robert M. Clark, Mitchellville; second, Chas. O. Garrett, Des Moines; third, Ewing Farms, Des Moines. Grimes: First, Robert M. Clark, Mitchellville; second, A. R. Soder, Hartford; third, W. W. Gwinn, Hartford.

Sweepstakes—First, Robert M. Clark, Mitchellville; second, Cyrus E. Harvey, Altoona; third, Cyrus E. Harvey, Altoona.

DISPLAY OF FRUITS.

JUDGES..............................R. S. HERRICK, Ames, Iowa, and
F. M. HARRINGTON, Ames, Iowa

General Collection—First, Cyrus E. Harvey, Altoona; second, Chas. O. Garrett, Des Moines; third, E. O. Worth, Mondamin; fourth, B. Stuart, LeMars; fifth, J. F. Wellons, Indianola; sixth, Mrs. Follie Mincer, Hamburg; seventh, C. E. Mincer, Hamburg; eighth, W. C. Marcue, LeMars.

ORNAMENTAL DESIGNS IN FRUIT.

JUDGES........................WESLEY GREENE, Des Moines, Iowa, and
WILLIAM VINEES, SR.

Best and Most Artistic Basket of Fruit—First, Mrs. Frank Stuart, Des Moines, score 95; second, Chas. O. Garrett, Des Moines, 90; third, Mrs. O. A. Duker, Altoona, 88; fourth, John C. Hol, Des Moines, 86; fifth, J. F. Wellons, Indianola, 81; sixth, Mrs. Ella Plummer, Des Moines, 80; seventh, Mrs. J. A. Sprague, Mitchellville, 78; eighth, B. Stuart, Des Moines, 76; ninth, Cyrus E. Harvey, Altoona, 75; tenth, A. R. Soder, Hartford, 73; eleventh, A. R. Toothaker, Sioux City, 70; twelfth, Mrs. Follie Mincer, Hamburg, 68; thirteenth, Clark Bros., Albia, 66; fourteenth, J. L. Todd, Des Moines, 64; fifteenth C. E. Mincer, Hamburg, 62.

PEARS.

JUDGE ....J. H. ALLISON

Collection of Pears, Not Less Than Fifteen Varieties—First, M. J. Worth, Mondamin; second, Cyrus E. Harvey, Altoona; third, E. O. Worth, Mondamin.

Plates, Any Worthy Variety (Premiums Limited to Fifteen Varieties)—First, Cyrus E. Harvey, Altoona, on four varieties; B. Stuart, Des Moines, on two varieties; M. J. Worth, Mondamin, on four varieties; Chas. O. Garrett, Des Moines, on two varieties; Kenneth Reeves, Waverly, on one variety; C. E. Mincer, Hamburg, on one variety; E. O. Worth, Mondamin, on one variety.

Second, M. J. Worth, Mondamin, on four varieties; Cyrcs E. Harvey, Altoona, on one variety; E. O. Worth, Mondamin, on four varieties; Kenneth Reeves, Waverly, on three varieties; Mrs. Follie Mincer, Hamburg, on one variety; C. E. Mincer, Hamburg, on one variety.

Best Seedling Pear—First, C. E. Mincer, Hamburg.

Largest and Best Collection per Plate, Distinct Varieties—First, Cyrus E. Harvey, Altoona; second, M. J. Worth, Mondamin.

GRAPES.

JUDGE.................................F. M. HARRINGTON, Ames, Iowa

Best and Largest Collection of Grapes, (four bunches to plate)—First, John C. Hol, Des Moines; second, Chas. O. Garrett, Des Moines; third, B. Stuart, Des Moines.

Campbell's Early—First, Chas. O. Garrett, Des Moines; second, B. Stuart, Des Moines.

Pockington—First, Chas. O. Garrett, Des Moines; second, John C. Hol, Des Moines.

Concord—First, Ewing Farm, Des Moines; second, Mrs. W. M. Riley, Paterson.

Worden—First, J. L. Todd, Des Moines; second, W. A. Pickering, Des Moines.

Delaware—First, C. H. True, Edgewood; second, Chas. O. Garrett, Des Moines.

Woodruff Red—First, Chas. O. Garrett, Des Moines; second, John C. Hol, Des Moines.

Wyoming Red—First, J. F. Wellons, Indianola; second, John C. Hol, Des Moines.

Duchess—First, Cyrus E. Harvey, Altoona; second, Chas. O. Garrett, Des Moines.

Moore's Early—First, Chas. O. Garrett, Des Moines; second, Ewing Farm, Des Moines.

Moore's Diamond—First, C. E. Mincer, Hamburg; second, John C. Hol, Des Moines.

Neagara—First, Mrs. W. M. Riley, Paterson; second, John C. Hol, Des Moines.

Agawan—First, John C. Hol, Des Moines; second, J. L. Todd, Des Moines.

Brighton—First, John C. Hol, Des Moines; second, B. Stuart, Des Moines.

Four Bunches of Grapes of Varieties Not Named Above (Limited to Five Varieties)

Elvira—First, Chas. O. Garrett, Des Moines; second, John C. Hol, Des Moines.

Early Ohio—First, J. L. Todd, Des Moines; second, John C. Hol, Des Moines.

Champion—First, John C. Hol, Des Moines; second, B. Stuart, Des Moines.

Martha—First, C. E. Mincer, Hamburg; second, John C. Hol, Des Moines.

Sweepstakes—First, J. L. Todd, Des Moines; second, C. H. True, Edgewood.

PLUMS.

JUDGE.................................J. W. MURPHY, Glenwood, Iowa

NORTHERN DISTRICT.

Largest and Best Exhibit of Plums, Not Less Than Fifteen Varieties—First, W. C. Marcue, LeMars; second, A R. Toothaker, Sioux City; third, Isaac Johnson, West Union.

PLATES.

DeSoto—First, A. R. Toothaker, Sioux City; second, Isaac Johnson, West Union.

Forest Garden—First, A. R. Toothaker, Sioux City; second, Kenneth Reeves, Waverly.

Hawkeye—First, A. R. Toothaker, Sioux City; second, Kenneth Reeves, Waverly.

Wolf—First, A. R. Toothaker, Sioux City; second, Isaac Johnson, West Union.

Wyant—First, A. R. Toothaker, Sioux City; second, Kenneth Reeves, Waverly.

Stoddard—First, A. R. Toothaker, Sioux City; second, Kenneth Reeves, Waverly.

Miner—First, A. R. Toothaker, Sioux City; second, Isaac Johnson, West Union.

Wild Goose—First, A. R. Toothaker, Sioux City.

Hunt—First, A. R. Toothaker, Sioux City; second, Isaac Johnson, West Union.

Surprise—First, Isaac Johnson, West Union.

Terry—First, Kenneth Reeves, Waverly.

Best Plate Domestic Plums—First, A. R. Toothaker, Sioux City; second Isaac Johnson, West Union.

Best Plate Not Named on List Not Exceeding Five Varieties—First, A. R Toothaker, Sioux City, on one variety; second, Isaac Johnson, West Union on three varieties; W. C. Marcue, LeMars, on one variety.

Second, Isaac Johnson, West Union, on three varieties.

Best Exhibit Domestic Plums Not Less Than Three Varieties—First, W. C. Marcue, LeMars; second, A. R. Toothaker, Sioux City.

Best Exhibit Japan Plums Not Less Than Three Varieties—First, Isaac Johnson, West Union.

Best Plate Japan or Hybrid Plums, Not Entered in Collection—First, Kenneth Reeves, Waverly

SOUTHERN DISTRICT.

JUDGE....................................R. S. HERRICK, Ames, Iowa

Largest and Best Exhibit of Plums, Not Less Than Fifteen Varieties—First, Cyrus E. Harvey, Altoona; second, Chas. O. Garrett, Des Moines; third, J. F. Wellons, Indianola.

DeSoto—First, John C. Hol, Des Moines, second, Mrs. Ella Plummer, Des Moines.

Forest Garden First, Cyrus E. Harvey, Altoona, second, Ewing Farms, Des Moines.

Hawkeye—First, Cyrus E. Harvey, Altoona; second, Chas. O. Garrett, Des Moines.

Wolf—First, J. F. Wellons, Indianola; second, Chas. O. Garrett, Des Moines.

Wyant—First, Chas. O. Garrett, Des Moines; second, E. O. Worth, Mondamin.

Stoddard—First, Chas. O. Garrett, Des Moines; second, Cyrus E. Harvey, Altoona.

Miner—Chas. O. Garrett, Des Moines; second, B. Stuart, Des Moines.

Wild Goose—First, B. Stuart, Des Moines; second, John C. Hol, Des Moines.

Hunt—First, Chas. O. Garrett, Des Moines; second, J. F. Wellons, Indianola.

Surprise—First, Chas. O. Garrett, Des Moines; second, J. F. Wellons, Indianola.

Terry—First, Henry George, West Union; second, B. Stuart, Des Moines.

Lombard—First, B. Stuart, Des Moines; second, Cyrus E. Harvey, Altoona.

Best Plate Domestic Plums—First Cyrus E. Harvey, Altoona; second, B. Stuart, Des Moines.

Best Plate Not Named on List, Not Exceeding Five Varieties Each Plate—First, B. Stuart, Des Moines, on one variety; J. F. Wellons, Indianola, on one variety; Mrs. Follie Mincer, Hamburg, on one variety; Cyrus E. Harvey, Altoona on two varieties.

Second, Ewing Farms, Des Moines, on one variety; Cyrus E. Harvey, Altoona, on one variety; John C. Hol, Des Moines, on one variety; B. Sturat, Des Moines on one variety; Chas. O. Garrett, Des Moines, on one variety.

Best Exhibit Domestic Plums, Not Less Than Five Varieties—First, Cyrus E. Harvey, Altoona; second, B. Stuart, Des Moines.

Best Exhibit Japan Plums, Not Less Than Three Varieties—First, Cyrus E. Harvey, Altoona; second, Chas. O. Garrett, Des Moines.

Best Plate Japan or Hybrid Plums, Not Entered in Collection—First, J. W. Pearson, Mitchellville; second, Chas. O. Garrett, Des Moines.

NATIVE PLUM SEEDLINGS.

First, M. J. Worth, Mondamin; second, Chas. O. Garrett, Des Moines; third, B. Stuart, Des Moines; fourth, Chas. O. Garrett, Des Moines.

NATIVE FRUITS.

JUDGE....................................R. S. HERRICK, Ames, Iowa

Plates Elderberry—First, J. L. Todd, Des Moines; second, Chas. O. Garrett, Des Moines.

Plate High Bush Cranberry—First, C. H. True, Edgewood; second, Kenneth Reeves, Waverly.

Plates Juneberry—First, Cyrus E. Harvey, Des Moines.

Plate Fresh Strawberry Progressive—First, J. L. Todd, Des Moines; second, Cyrus E. Harvey, Altoona.

Plates Fresh Strawberry, Other Variety—First, Ross L. Bridgeford, Jefferson, second, Cyrus E. Harvey, Altoona.

Plates of Each Other Native Fruit—First, J. F. Wellons, Indianola, on three varieties; S. D. Whinery, Des Moines, on two varietise.

Second—S. D. Whinery, Des Moines, on one variety; John C. Hol, Des Moines, on one variety; Cyrus E. Harvey, Altoona, on two varieties; J. F. Wellons, Indianola, on one variety.

Best Collection of Native Fruits—First, Cyrus E. Harvey, Altoona; second, J. F. Wellons, Indianola.

EDIBLE NUTS GROWN IN IOWA.

NATIVE OR FOREIGN ORIGIN.

JUDGE....................................R. S. HERRICK, Ames, Iowa

PLATES.

Black Walnut—First, W. A. Pickering, Des Moines; second, Edith Smith, Altoona.

White Walnut or Butternut—First, W. A. Pickering, Des Moines; second, J. L. Todd, Des Moines.

Shell Bark Hickory Nut—First, Cyrus E. Harvey, Altoona; second, J. F. Wellons, Indianola.

Hazelnut—First, John C. Hol, Des Moines; second, Chas. O. Garrett, Des Moines.

Sweet Chestnut—First, J. F. Wellons, Indianola; second, J. L. Todd, Des Moines.

Japan Chestnut—First, Cyrus E. Harvey, Altoona; second, B. Stuart, Des Moines.

Hybrid Chestnut—First, Wib F. Clements, Agency; second, B. Stuart, Des Moines.

Peanuts—Mammoth——First, Wib F. Clements, Agency; second, B. Stuart, Des Moines. Spanish—First, Wib F. Clements, Agency; second, B. Stuart, Des Moines.

Each Other Nut Grown in Iowa—Grand Almond: First, Cyrus E. Harvey, Altoona; Japan Walnut, second, John C. Hol, Des Moines; Jumbo Hickory, first, Wib F. Clements, Agency.

Best Collection of Nuts—First, Cyrus E. Harvey Altoona; second, Wib F. Clements, Agency.

REPORT OF BOYS' JUDGING CONTEST, IOWA STATE FAIR AND EXPOSITION, 1916.

Name	Horses				Cattle				Hogs				Corn				Rank	Total score
	Stallions		Mares		Fat Steers		Dairy Cows		Poland China		Duroc Jersey		Yellow		White			
	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing		
Wallace McKee, Indianola	53	26	60	32	30	34	52	30	54	35	54	35	60	39	54	39	687	1
Roscoe Ewen, Milford	57	32	54	28	60	35	60	26	30	33	60	31	56	32	50	29	673	2
Harold V. Jones, Tabor	50	35	60	34	45	32	60	32	60	33	30	31	56	38	44	32	672	3
Robert Thomas, Cedar	53	29	54	23	60	34	60	22	60	32	60	30	56	20	50	28	671	4
Fred James, Waukee	60	18	52	28	25	34	60	26	54	35	60	29	56	38	56	32	663	5
Malcom Trout, Birmingham	28	34	35	28	55	36	52	24	60	36	60	36	56	36	53	32	661	6
Franklin W. Dove, Marion	46	28	54	33	30	29	60	33	60	32	60	24	52	33	52	33	659	7
A. J. Thornberry, E. Pleasant Plain	56	26	54	33	60	32	50	23	48	33	60	30	52	35	38	27	657	8
Murle Mills, New Providence	60	33	52	34	45	37	60	23	30	35	60	34	56	32	24	39	654	9
Geo. Teachout, Jr., Shenandoah	53	33	60	35	45	36	52	32	30	32	45	31	44	36	49	37	650	10
Francis Young, Shenandoah	53	30	60	34	45	33	50	30	54	34	25	32	45	29	58	33	645	11
Anthony J. Robinson, Robinson	50	26	52	26	45	33	60	26	15	27	60	30	56	30	60	38	634	12
Loyd Olson, Willingford	42	20	54	34	45	35	60	35	60	36	45	32	32	35	34	30	629	13
Lee Gallup, Fairfield	46	34	60	32	55	32	52	28	54	28	25	33	48	30	38	33	628	14
Ralph Wall, Burdette	53	26	52	34	60	33	52	28	15	28	60	32	34	30	58	32	627	15
John Garrels, Mt. Pleasant	57	32	54	30	30	34	50	26	54	34	45	31	44	32	48	25	626	16
John Shaw, Nevada	56	22	60	32	45	22	60	24	60	26	25	33	40	35	54	21	625	17
Everett McKee, Carlisle	45	08	54	20	55	27	60	33	35	30	60	30	50	30	48	38	623	18-19
Lynn Beardsley, Shenandoah	50	32	60	28	45	37	50	28	48	33	54	30	26	25	42	35	623	18-19
Harland H. Harper, Ames	46	20	60	24	60	35	50	20	30	33	45	28	56	36	48	30	621	20
David N. Jameson, Burlington	56	30	35	26	60	32	60	28	35	31	60	34	42	30	30	31	620	21
Alvin T. D. Davison, Mechanicsville	57	20	52	23	60	33	52	32	30	32	54	23	20	39	48	39	614	22-23
Leigh Gordon, Lenox	26	33	60	36	45	34	60	30	48	32	45	33	48	21	30	33	614	22-23
Gordon A. Sizer, Britt	50	27	52	28	60	35	60	26	15	33	25	33	54	30	55	30	613	24
James Hoxie, Shenandoah	14	20	35	33	60	36	50	28	54	33	60	35	44	30	39	34	605	25
Donald Riley, Chillicothe	48	20	60	18	60	30	60	26	15	20	54	31	60	18	52	30	602	26-27-28
Everest H. Wallace, Mondamin	48	26	52	33	45	36	30	32	35	34	54	35	56	32	26	28	602	26-27-28
Russell Gray, Albia	46	29	54	30	45	35	30	20	48	33	60	34	52	25	30	31	602	26-27-28
Geo. Rosenfeld, Kelly	40	26	52	33	60	35	50	18	54	32	15	20	56	22	58	30	601	29
Carl Harrington, Dysart	60	28	54	26	25	26	60	25	35	29	45	28	44	25	48	40	598	30
Lister Schuerman, Mt. Pleasant	54	24	54	32	25	29	52	20	54	25	45	28	56	20	54	22	594	31

REPORT OF BOYS' JUDGING CONTEST, IOWA STATE FAIR AND EXPOSITION, 1916.—CONTINUED.

Name	Horses				Cattle				Hogs				Corn				Rank	Total score
	Stallions		Mares		Fat Steers		Dairy Cows		Poland China		Duroc Jersey		Yellow		White			
	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing	Reasons	Placing		
Laurence Winkel, Algona	57	25	54	16	45	29	50	29	54	32	25	32	32	22	52	39	593	32
Arthur Graham, Hull	48	24	60	22	55	32	60	30	35	26	15	28	56	25	56	20	592	33
Robert Watkins, Whiting	28	28	60	36	15	30	52	34	30	31	45	31	60	32	48	31	591	34-35
John D. Gough, Allison	26	25	54	25	60	34	50	33	30	34	45	33	48	30	34	30	591	34-35
Ralph Williamson, Chariton	38	22	60	20	60	31	50	23	30	34	45	31	56	26	34	28	588	36-37
Newell Beatty, Fairfax	48	23	54	23	60	32	50	28	15	18	45	31	40	30	58	33	588	36-37
Glenn L. Bass, Shelby	60	33	30	26	45	32	52	30	15	29	60	31	35	30	39	36	583	38
DeMoss W. Rayburn, Murry	28	26	54	32	30	30	52	23	35	31	45	32	56	26	45	37	582	39-40
Harold Harris, Stuart	28	30	54	30	30	28	52	24	48	31	60	32	42	37	26	30	582	39-40
Mark J. J. Dolan, Goose Lake	46	23	20	15	55	33	50	18	48	29	60	23	38	28	26	31	579	41-42
Arnold Monroe, Webster City	60	18	30	26	45	33	60	26	30	31	54	28	52	25	40	21	579	41-42
Frederick Henderson, Loveland	57	22	52	23	55	28	30	24	60	24	45	26	56	28	32	15	577	43-44
Oscar Atwood, Ogden	50	33	54	30	30	30	50	26	30	27	54	31	30	20	50	32	577	43-44
Wm. Roudabuch, Brooklyn	10	22	54	22	60	34	50	31	15	30	60	35	40	38	37	38	576	45
Maurice Horrigan, Davenport	38	32	52	32	30	29	30	26	30	33	60	34	56	20	40	33	575	46
Martin Byce, Walker	31	18	35	32	60	35	52	34	35	30	25	31	48	20	52	35	573	47
Leonard Goodrich, Linden	56	30	52	24	25	32	60	24	15	26	60	26	60	20	40	2	571	48
Halice H. Slaton, Des Moines	25	16	54	20	45	37	30	23	54	30	54	30	52	25	44	30	569	49
Gerald Dolan, Farley	32	18	52	15	55	27	52	18	60	27	54	22	48	15	52	20	567	50
Harold Fisher, Creston	56	25	54	22	55	10	50	20	48	17	54	20	48	28	30	27	564	51-52
Lawrence Baumover, Carroll	40	23	54	28	30	26	60	24	15	28	60	32	56	20	48	20	564	51-52
Ellis Crawford, Ellston	48	20	52	27	55	28	60	24	48	22	25	30	38	20	39	25	561	53
Harold Slinger, Charles City	45	20	54	23	30	15	60	18	48	20	60	15	29	28	55	39	559	54-55
Leo. V. Slater, Hazelton	31	26	52	25	30	30	60	31	35	28	45	33	52	36	26	19	559	54-55
Emmet Gant, Westfield	53	26	35	28	45	30	52	30	48	30	25	27	48	25	30	26	558	56
Damon P. Edwards, Storm Lake	50	26	52	16	30	24	60	24	35	31	45	31	54	20	42	15	555	57
Gordon Carter, Waukee	60	26	54	28	60	15	52	20	48	20	45	21	44	17	34	10	554	58
Chas. McNamara, Winterset	60	22	54	12	45	25	50	27	35	20	60	31	35	30	26	21	553	59
Phillip Little, Pleasanton	16	15	54	15	55	26	60	15	60	26	25	20	60	38	44	22	551	60
Gerald Walter, Panora	46	26	30	24	25	33	30	20	30	32	60	32	54	38	44	26	550	61
Evert Darland, Hastings	60	25	60	30	15	28	20	22	35	23	54	26	44	22	52	32	548	62-63

Walter Smith, Steamboat Rock	60	00	54	12	45	10	50	18	48	28	60	28	56	24	34	21	548	62-63
Taylor Conger, Waukee	32	24	60	26	55	27	20	16	35	20	45	23	56	35	30	38	542	64-65
Scott Weber, Conway	34	20	54	15	60	10	50	20	54	20	25	20	60	36	38	26	542	64-65
Virgil Barker, South English	54	24	30	26	45	31	30	25	15	28	25	27	56	30	56	38	540	66
Carl Linn, Waukon	53	22	54	20	55	23	30	20	30	31	60	30	14	25	52	18	537	67
Raymond Whannell, Traer	23	22	54	26	45	30	60	26	54	22	15	20	50	28	36	25	536	68
Merlin Stoves, Anamosa	34	24	54	33	55	30	52	24	60	19	36	27	26	18	30	17	534	69
Albert Wickel, Sanborn	48	24	60	32	15	20	30	20	55	21	54	32	45	15	45	17	533	70
Will J. Kern, Hubbard	22	20	54	10	60	26	60	28	30	25	45	15	26	23	45	40	529	71
Fred [illegible], Arcadia	57	[illegible]	20	20	30	20	50	22	60	33	60	24	56	28	[illegible]	18	525	72
Roger Hoffman, Ida Grove	53	18	54	05	45	28	50	12	60	23	15	24	56	20	34	22	524	73
Arthur Stumme, Readlyn	42	25	60	25	30	20	60	26	48	27	30	28	20	20	44	18	523	74
Tony Lenworthy, Earlham	28	24	60	31	30	25	52	18	55	21	45	22	50	20	26	35	522	75-76
Fay Hartley, Laurens	26	30	60	26	15	23	60	26	54	30	30	29	30	21	34	28	522	75-76
Bertrand Hendrickson, Lake Mills	53	26	20	12	60	05	60	28	00	50	25	21	50	28	52	31	521	77
Ralston Jewett, Edgewood	40	28	52	23	15	21	50	20	15	20	60	25	45	20	58	28	520	78
Walter A. Butler, Orion	50	22	35	26	45	25	30	30	48	28	54	24	50	10	43	18	518	79
Arnold H. Exo, Muscatine	28	20	54	32	60	33	60	22	35	21	15	24	48	28	20	15	515	80
Ray Norayke, Rubio	28	22	30	10	60	23	60	22	18	29	60	26	32	31	44	21	514	81
Harvey Christiansen, Humboldt	45	30	54	24	15	29	20	26	30	30	15	27	56	35	52	25	513	82
Wayne Gordman, Sac City	32	18	30	22	55	20	50	28	30	27	45	28	50	33	22	20	510	83
Henry Boer, Wiota	25	28	54	30	45	30	30	24	15	27	25	30	34	25	49	38	509	84
Vernon L. Shuck, Parkersburg	25	23	54	25	15	26	50	16	35	24	60	31	48	20	36	15	505	85
Edward Shields, Bonair	60	15	34	20	25	24	52	30	55	21	15	22	56	29	26	20	504	86
Harold H. Cooper, Anita	28	26	54	25	25	20	60	15	54	30	45	28	38	15	14	20	497	87
Ralph Rosthuma, Sheldon	45	20	20	18	15	20	50	25	60	28	54	30	30	15	52	12	494	88
Lennon Sefrit, Beaver	10	10	54	15	25	23	60	23	30	33	54	32	36	28	32	28	493	89
Duran H. Summers, Malvern	28	25	52	25	30	26	20	18	60	28	15	20	57	15	54	19	492	90
Vincent Mandersheid, Bellevue	54	29	54	20	30	21	30	10	60	16	25	19	56	10	34	20	488	91
Taylor Huston, Valley Junction	48	07	20	05	15	15	60	15	54	15	15	21	54	28	52	18	472	92
Wm. Crozer, North Liberty	25	05	30	10	60	18	60	05	30	18	45	15	52	20	45	30	468	93
Hollis Kimball, Keosauqua	56	26	54	08	45	26	30	15	54	20	40	26	45	20	00	00	465	94
Andy Heesenga, George	32	20	54	18	15	21	60	10	15	21	30	30	50	18	45	19	458	95
Wm. Oneill, Emmetsburg	00	00	54	20	25	34	50	26	35	19	60	22	29	25	34	21	454	96
Kenneth Cook, Pulaski	53	18	30	32	30	22	30	18	60	18	25	25	25	10	34	10	440	97
Roy Gross, Adel	14	20	54	24	30	28	50	15	35	22	25	24	32	28	16	20	437	98
Russell Neff, Fairmount	28	20	35	04	60	27	30	12	30	15	45	20	42	15	26	10	419	99
Donald Gibbons, North English	25	10	54	00	45	21	30	00	60	00	25	10	48	21	44	10	403	100
Richard Claus, Plymouth	00	00	60	00	60	28	60	22	00	00	45	28	30	28	38	18	377	101
Lester Bishop, Lacona	38	18	30	00	55	15	30	15	48	00	15	00	35	21	59	10	369	102

AN OVERFLOW IN IOWA.

The Breeder's Gazette.

It was overflow year at Des Moines. Following rather a lean year, with its overhang of shadow of disease and the disaster wrought by a wet harvest and a frosty fall, it was most heartily welcomed. Fair managers like farmers are at the mercy of the elements. Late years have witnessed vast improvements in equipment, resulting in safety for valuable animals and comfort for exhibitors and visitors in all weathers, and in these respects Iowa occupies a post of conspicuous prominence, but all these factors in the greatest success of such an exhibition fail to save from loss when farmers are harassed by such unseasonable weather handicaps as afflicted the Iowa husbandman in 1915. The pendulum swung from wet to dry this year, and even a slight tinge of frost the week of the fair in the northern section of the state recalled the blight which fell on the corn crop the last of August; but agriculturally Iowa is so far more agreeably situated than last year that the fact found reflection in an overflow of exhibits and turnstile records that materially exceeded day by day the totals at the previous fair, and suggested strongly the realization of the ambitions of the managers to reach eventually an aggregate attendance of 300,000.

The increased gate receipts were necessary. The fair opened with a deficit of $42,000, incurred by ambitious building which carried outgo considerably in excess of the disappointing income. Maintenance only was the plan during the past twelve months. No new building enterprises were undertaken. Members of the board provided personally for the financing of the deficit, and it was hoped that the close of the exhibit would practically see the debt liquidated. Gate receipts for the first half of the period held promise of that desirable eventuation.

Cars and the camp city are rapidly tending to supply the basis of a paying patronage. The fair week campers are annually gaining in number, and this feature receives every possible encouragement. For the first time the main avenue leading from the city to the grounds was well paved. The badly worn brick had been replaced by asphalt, thus encouraging city attendance. The auto-owning farmers who covered miles of dusty roads with abundant chuck holes were ready enough for the smooth pavement over which they rolled to the grounds, and were "boosters" for road-building and maintenance. An appreciable part of the attendance came in motor cars, and the efficient police force—the cadets from the Iowa State College at Ames, under command of Gen. Lincoln—were kept busy preventing serious congestion on the driveways. The future holds a big problem, as farmers are rapidly adding motor cars to their equipment and many additional thousands will journey to the fair in such conveyances.

A material factor in the big attendance built up at this fair is the night grandstand entertainment. Particularly does it appeal to the city folk and on more than one evening every possible bit of space—seating and standing—was occupied. The fireworks spectacle is more appealing than ever, and thrillers of the most sensational character are afforded in liberal supply on the program. The biplane, with its trails of fire circling over the infield, inaugurated a program which chained attention for two hours. Acrobatics and trained animals from the backbone of the entertainment, and the Iowa fair presented a program of exceptionally high class. The music, liberally supplied, was of a satisfying character. The Hawaiian players and singers added a novel feature, much enjoyed in the coliseum during the stock judging, as it afforded a most agreeable contrast to the blare of the big brass band that usually drowns all conversation, irritates the animals and rasps the nerves at most of the big fairs.

The official assurance is that the corn crop this year in Iowa is "fair to good." Given maturing weather and the record will likely show that the state is most favored of all in the cornbelt in this particular crop. Around Des Moines evidence of drouth damage is wholly wanting and reports from various sections indicate yields from the average to the exceptional. That damage has been done in certain spots central and southern in the state is undoubted. Small grains yielded abundantly and harvests have been favored with ideal conditions. Fall plowing would be greatly facilitated by a general rain, and the final outcome of the corn crop would be appreciably better with one more wetting. Conditions were quite agreeably reflected in the agricultural exhibits building, where county and individual farm displays demanded much more space than ever before. Of powerful appeal were these artistically presented exhibits, most of them to be credited in large part to the intelligent activities of the county agricultural agents. Dominant in the big hall was the prize-winning horn of plenty, pouring out its golden flood of corn, which had been brought from the Panama-Pacific exposition. Dressed out in the variety of grains profitably produced in this state, the people could gather a concrete idea of how forcibly the claims of this agricultural commonwealth were presented at San Francisco. Horticulturally the exhibits were attractive, although the fair occurs too early for the best representation of the fruits of these fields. Iowa "keeps a bee" evidently, as well as a cow, judging from the exhibit from the apiaries, but considerably more proof of its dairy importance is required at this fair.

The small dairy exhibit in the agricultural building, fostered by the state dairy and food commission, has been rather widely sundered by the removal of the implement and utensil exhibit to machinery hall. The official exhibit of the commission was particularly attractive this year, with its arch of blocks made from butter, with cleanliness as the keystone of the arch. Through the opening was seen an attractive picture of a model dairy barn and a herd of good cows in the foreground, while in front of the arch stood a tub of butter with the Iowa official butter trade mark stamped on its top. Iowa ranks high among the states in its dairy interests, and the scattered and comparatively meager character of the exhibits at its state fair do not at all adequately show forth the industry. A dairy building is among the pressing needs of the fair grounds, in which some tangible exhibit of the magnitude of this industry may be properly staged.

The state college is in its educational atmosphere with its exhibits. A series of lessons in agriculture are arranged around the walls of its special building, teaching by miniature model and by plainly printed text lessons that may be learned by those who run. Significant indeed is the fact that the visitor is first greeted by a very impressive display of a plan for electrically lighting the farm home and barn. This is a keynote of the fair—the effort to aid the Iowa farmer in his ambitions for an equipment which will ensure the economical service and the comfortable life so generally the lot of the city dweller.

Machinery hall afforded ample evidence of this fact. The modern home equipment, whereby labor is lessened and comfort increased, made appeal in all its manifold manifestations. Lighting, heating, running water plants, ventilating systems, building materials, and kitchen and laundry equipments had no less conspicuous a display than did the equipment which made for the welfare of the cattle and swine. Manufacturers have evidently appraised properly the ambitions of the Iowa farmer. The poultry industry received prominent demonstration and dairy equipment, which should be grouped in one special building along with products of the cow, occupied much space. The buggy exhibit continues to shrink, but it is replaced by trailers and truck bodies for motor cars. The consolidated school omnibus, designed to be heated on cold days, indicates how insistently farmers of the state are demanding facilities and comforts in the education of their children commensurate with those enjoyed by city children.

The big machinery men were present in numbers that afforded opportunity for study of the latest types and improvements. A little vacant space was available, as some of the big outfits either withdrew from fair exhibits or curtailed their shows. So far as this fair is concerned, the loss is theirs. A tractor demonstration was given by a number of manufacturers, against the protest of others who pointed to the agreement that only one tractor demonstration should be made each year in one state. But the opportunity was too good to be lost. The exhibit, and silo town alongside of it, where a score of silos of different types have been built and filling machinery was in operation, furnished field for study which was carefully cultivated by visiting farmers.

Forty-five varieties of autos were grouped under the grandstand with its canvas-covered annex, and lack of space shut out a half-dozen others who applied. The automobile dealers' association and the fair officials are in full accord in this exhibit and the display engrossed the attention of men and women from the farm the week long. If any doubt as to the hold of the motor car on Iowa farmers were indulged, it would be resolved in the light of the eager interest in this exhibit.

The need of a dairy building is not the only one. In the expensive task of rebuilding these grounds the managers have had much clearer vision than the means with which to materialize that vision. The cattle section is very insistent on more room and better protection. Cattle were scattered about in tents, as the overflow was pronounced. Plans have been drawn which will provide sufficient quarters for all cattle, beef and dairy, which knock for admission to these grounds, and a hopeful feeling is entertained as to the attitude of legislators toward this enterprise.

If entries in the swine department continue to expand—they reached over 3,000 at this fair—it will be necessary to knock out the useless amphitheatre seats in the show building, and put in pens. It was a busy place the week long, with exhibits of outstanding character. Sheep mustered 700 entries, which is 100 more than last year, and in the fine comfortable exhibition building the shepherds passed a contented week. The word contented is deliberately chosen. Sales of sheep probably exceeded in volume any ever made at this fair and full order books conduce to a content that results from no other cause.

The horse section still retains its grip. Draft horses lacked some of the stables of the big importers who aforetime contributed liberally to the displays, but Iowa breeders largely filled the gaps thus made, particularly in the younger classes. Clearly of the sensational character were some of the rings filled almost exclusively from the breeding farms of the state. Ponies continue in large display, and saddle horses were attractive, but a marked deficiency was noted among the harness horses. The night shows in the coliseum were quite meager as to these classes, for which effect several causes were known. As these entries dwindle in numbers public policy and the ends of the fair managers will be best served if additional encouragement is given the ponies and the saddle horses.

Special exhibits of the J. Crouch & Son six-horse team of Percherons and the Anheuser-Busch six of Shetland Ponies afforded a highly interesting contrast in equine types.

The cattle in most respects made memorable exhibits. Dairy breeds were particularly strong with a few exceptions, and on the beef cattle side of the arena sensations were so frequent as to set a standard which will be difficult of future elevation. Almost all displays were made to crowded houses. That is to say, at all times of the day and on almost all days, the seats in the coliseum were filled by farm folk eagerly intent on the work of the judges, their interest directed intelligently by a carefully-compiled catalog of cattle and horse entries. It was a busy week for exhibitors and herdsmen, and the judges found plenty of problems the week long.

The call for improved live stock is daily becoming more insistent and the agricultural vocations are attracting to themselves some of the strongest minds of the country. Noteworthy it is then that at the opposite range of human achievement, among the insane, deaf, blind and other defective dependents, interest in high-class stock is acting as a corrective toward a normal human status. The state institutions of Iowa furnished an exhibit of fully developed draft horses, carefully handled dairy cattle, well bred poultry and attractively exhibited small animals that commanded the attention of nearly every visitor. Nine institutions participated in the exhibit which was housed in a separate tent. The opportunities for further development of this idea are unlimited, and it is to be hoped that such exhibits will stimulate an interest and spirit of loyalty among the state's charges that will not only bear economic fruit, but make life more enjoyable for its unfortunates.

THE CATTLE SECTION.

THE SHORTHORNS.

Whether the exhibit of the red, white and roans excelled the climax-capping show of last year on these grounds we decline to guess. Numerically it rose to unheard of heights, and with its entries of more than half a hundred in the senior bull and the senior heifer classes, it set new marks in the exhibition of the beef cattle breeds. Readily enough the breed carried the honors for average excellence—a position it has not always held in Des Moines. Interest ran high, as the futurity contests had enlarged entries materially, totalling about one-third more than in the same calf classes last year. Barring the inevitably ragged condition of the cow class, with calves at foot—rather a high price to pay for insurance that a non-breeder does not now and again win honors—few stones could be thrown with accurate aim at the average character of the classes. A very few young bulls of inferior merit gave variety to the exhibit, but on the whole it was a smashing presentation of the excellencies of the breed, and for the largest part submitted with finished herdsman skill. Exhibitors numbered 40 and the cattle in the stalls totaled 345.

Five states besides Iowa contributed the pick of their herds, while out in a big tent 30 Milking Shorthorns from The Otis Herd, Willoughby, O., gave greater geographical scope to the display, although they did not appear in competition. The American Shorthorn Breeders' Association offered to duplicate any prizes offered for Milking Shorthorns by state fairs. Iowa did not respond to the offer, but Minnesota did, and these Ohio dairy Shorthorns stopped over at Des Moines on their way to Hamline, and were subjected to no little approving inspection in a state which is prominent in the production of both butter and milk, and which has ample room for a cow of dual production. A. J. Ryden, Galesburg, Ill., arranged the list in discriminating fashion, and was quite willing that the usual differences of estimate should prevail where merit was so palpably well-balanced as in many classes.

BULL CLASSES.

The aged bull class had at its head the white Silver Knight, from Illinois, which faced down 13 competitors. We say faced down because his fore-end excellence, particularly his spread and thick cover of fore ribs, won him title. Marr's Avon has more scale and is a bigger-middled bull and heavier ended, but his middle is a trifle too big in its lower lines. Perhaps Sultan's Last verged somewhat on the type more rugged than the average of the lot, but his wide and level top were noticeable, if his rounds were less acceptable. The fine character of Royal Silver won him recognition. On the average it may be said that the two-year-olds were more notable than the aged bulls. A double quartette was handily enough headed by the roan Choice Cumberland, son of Hopeful Cumberland. This Missouri bull is of real championship stuff, end for end, meeting critical requirements in type and finish. He had a wealthy fleshed bull to beat in

Superior Knight, one done to a turn with exceptional evidences of masculinity. Dale's Renown is compactly-fashioned and mature in bull appearance, heavier in crest than the white Cumberland Standard, which is very well furnished throughout the carcass. They got better as they got younger.

The eight senior yearlings arrayed themselves in more attractive excellence than either of the other classes. A roan calf was sold along with his dam for a good price to a neighbor of the Bellows Bros. and later they bought him back. It cost them $5,000 to do it, but Village Supreme, the winning senior yearling, would have been taken off their hands by several breeders at a little profit, even at that. This son of Sultan Supreme is one of the bulls that dominates a strong company, sustaining searching criticism quite successfully, and charming with type, flesh and bloom. A real block with red roan hair is Violet's Dale, spread throughout the frame and well covered, while the white Village Marshal is straight and round-turned as a gun barrel. Among the 14 juniors the tops stood out clearly as of pleasing character and the tops ran a long way toward the tails. A well grown very dressy snappy red named Chief Champion was ahead, having the length and the fullness of flanks that are desired. A nuggety sort is Silver Brown, with all the condition he needs carried smoothly, roan in hair and mellow in hide. Dale's Commander worked well up front, smart in his finish of head and very baggy in breeches, and the ripe heavy-ended mellow roan Royal Pride was his companion next in line. The style and stamp of Type's Model might have won him higher place; he has attractive length and levelness and stands near the ground.

THE FUTURITIES.

No less than 67 senior bull calves were entered in the futurity contest and 52 faced the judge. They were finally whipped into line, or lines, and the long-continued examination was pursued with method and discrimination. No attempt at particulars is made. The ratings ran down to 20 in the futurity money, and end for end up and down the long line, the interested breeders found ample occasions for confidence in the future bull shows of the breed. If no real sensations were developed, it remains clear that many calves of sterling merit in breed type were forward. As might be expected with numbers a trifle more than cut in two, the juniors showed a shade better on the whole, and probably comment was a little more enthusiastic concerning the youngsters up top. Many there were who considered Mr. Kane quite justified in naming his rolly-polly red calf Faultless Dane. He was a prime favorite in the barns long before the judge found him for the head of this company. In ribs, loin and quarters Cumberland Marshal 2d submitted a stiff argument with the leader, and the red roan Augusta's Sultan 2d entered into this argument in right spirited fashion. The bull show reached its greater heights in this concluding class.

THE FEMALES.

So long as the class calls for calves at foot of the aged matrons, just that long will the breed suffer in its show yard presentation. Some capital cows in condition for pasture and barn lot were forwarded, and show animals of some merit could have been made of several of them. It remains to be seen how long this gap in the show yard condition of the breed will be permitted. The two-year-olds stretched out to the number of 16 and again kindled enthusiasm. It was an old-time exhibit of the breed, with almost every one a real show heifer. Up top a model-like heifer in her roan color, her form and her finish stood an acceptable first, Simplicity 7th, from Minnesota, until the white Lady Violet 7th from Nebraska, a bigger and bulkier pattern, was ranked above her. Her grand back and feminine front are very appealing. A broad expanse of rib drew attention to the roan Daisie Lass 3d. The winnings of Messrs. Rees occasioned no little congratulatory comment. To hold premier position in three such exceptional classes as these two-year-olds, senior yearlings and juniors, is a rare honor, won with animals of outstanding excellence. The senior yearling is Lady Violet 8th, a daughter of Ruberta's Goods, as were the other two. She is a roan of that appealing type which suggests the outlines of the mature cow, and ranks among the satisfying animals of the show. Eastlawn's Lassie made her way up front by reason of her bullet-like rotundity and smoothness, and the roan Village Maid 3d is somewhat off the same piece. More unevenness existed among the junior yearlings than the two preceding classes, but the tops were none the less pronounced in merit. The roan Lenora Goods ranks readily in the trio which added measurably to the show yard fame of her Nebraska breeders, a heifer of correct pattern and filled from end to end Village Clara 6th, a roan of remarkable thickness, is deeper let down in the rib than Lenora Goods, but not so nicely finished in the hind quarters. Village Beauty 3d made three of a kind up top—lovely heifers, typey and bloomy, and reflecting distinction on their breeders and credit on the breed.

THE HEREFORDS.

An exhibit of whitefaces of sterling merit was contributed by Iowa, Missouri, Kansas and Mississippi breeders, the entries reaching a total of 155. The Kentucky and Wisconsin entrants failed to appear, thus leaving to a later show an accurate estimate of the combined strength of the Hereford campaign herds. Assuming that the eastern and southern contingents are up to their usual strength we shall see a season of show yard appeal quite worthy the traditions of the breed. It is probably true that on the whole the Iowa fair display has in some former times presented rather more of the sensational and with perhaps better bloom, but from start to finish an admirable attractiveness of entries graced the ring, with only a few exceptions, chief among them some specimens of the polled variety which could not measure up to the standard of this arena. The positions were assigned by Phil. C. Lee, San Angelo, Tex., President of the American Hereford Cattle Breeders' Association.

THE BULL CLASSES.

Among the seven aged bulls the three up top deserved especial consideration. The event left Gay Lad 16th, the champion of former seasons, in his accustomed top-notch position. He carried too much bulk for his competitors albeit it is asking much of early-maturing Herefords to maintain until under years of fitting the extreme smoothness that they show in their earlier forms. His stable companion Bonnie Brae 60th, for which Mr. Harris gave $11,100 at auction, is decidedly a wonder in his egg-like conformation and hind quarter finish, but all his exquisite modeling and bloom failed to land him above that bulky good-headed level-backed and heavy-quartered bull from Kansas, Publican 4th, as his heavy cover gives warrant for recognition. The two-year-olds numbered among the five of them the grand champion in the person of Bocaldo 6th. This droop-horned bull, with exceptional evenness of modeling and fitted to the minute, is of satisfactory championship timber. The mellow-hided yellow-red Ardmore claimed next rank by reason of his width and smoothness and the round-turned neatly-finished Good Lad 7th was third. If Agitator, another son of Bonnie Lad 20th, sire of Ardmore, was the least in size of the company of five senior yearlings, he claimed compliment on the strength of his spread and evenness, his neatness of finish and brevity of leg. Impressive in head and blockiness of build is Vernet Prince 31st that followed him on the list, and Repeater 57th is quite bulky. More of unevenness appeared among the junior yearlings than usually characterizes this class. A pair of Harris bulls, Gay Lad 40th and Repeater's Model, thick and meaty, the former notable in his back, loin and buttocks, were the leaders, and the mellow Tippecanoe's Promise came third. The senior calves were a fair average, better than the ring preceding, and had as head Rialto 2d, whose back in its smoothness looks like turned from a lathe. Repeater 83d was deeper ribbed and carried much heft of hind-quarter and a little more finish at the tail head than Prince Donald, which is a calf of much the same stamp in low-setting. The juniors were a pretty bunch and had as head Bonnie Donald, a rare good lad.

THE FEMALES.

Among the eight aged matrons were some which had borne the brunt of the show yard battles on many a field and bulk may perhaps be said to have been more dominant than bloom. Vernet Queen 8th has held her own and more, in that she has improved in some respects while accumulating her impressive bulk, and at this time she carried her claims successfully clear through to the crowning female honors. Fairview Bonnie 2d captivates with her charming countenance and emphasizes her merits by the hooping of her middle. The thirteen two-year-olds were led by another of the Vernet Princesses from Mississippi, the 23d, and not many flaws are picked in her. Disturber's Lassie 12th is distinguished by an evenness of rib-arch and a finish of hindquarters that are enviable in their excellence. Miss Repeater 7th is particularly strong in her finish of front and breadth and levelness of middle. Bloom was predominant among the dozen senior yearlings, a splendid company of highly fitted heifers. The head was found in Belle Blanchard, whose winsome feminity marks but the start of her merits that continue through frame, hind-end finish and maturity of form. Uniformity of the bullet-like order characterizes Miss Gay Lad 32d, altho she is projected on a bit smaller scale than the other. Vernet Princess 26th reveals the attractiveness of front which characterizes her tribe. That same tribe furnished the top-notcher among the juniors in Vernet Princess 33d, one of the real choice ones in her modeling and fleshing. Levelness of frame, is Standard Lady 23d's qualification, and Toyah has scale, a fine front and heavy quarters. Much merit surged to the front among the senior babies when the tops were sorted out of the 19 entries. A little one, Disturber's Lass 2d, just five days out of the junior class and therefore at a disadvantage in size, gave convincing demonstration of accuracy of breed type and attractiveness of bloom and therefore capped the company. Oleen was larger and very level and strong of back, and those which followed on the list are future winners in the making. The younger lassies found suitable head in Bonnie Princess, whose taking form and maturity rank her among the youngsters of the breed to which high hopes may be pinned. A Vernet Princess was the runner-up.

THE ABERDEEN ANGUS.

A stirring show of blacks rewarded and cheered the unusually large number of breed adherents that gathered about that section of the arena which staged the competitions. Numbers were liberal, reaching 149 and crowding close the Herefords for their accustomed rank as second in statistical strength at this show. It probably represents a popular conclusion to hold that the breed has rarely if ever assembled so outstanding a show on these grounds. Disappointment is keen when the doddies do not rivet attention to the female classes but some little charity of comment must usually be observed toward the timber of the bull classes. The exhibit last week was eminently strong in the male line. Bulls of real show yard character were forward and admirers reveled in the display. While only four states made entries, the representation was wide, reaching from Oklahoma to Washington on the western coast, whence came the firm of Chester A. Congdon & Otto V. Battles, the latter for years prominent among the Angus breeders of the Hawkeye State. The awards were distributed with the seasoned judgment of John E. Robbins, Horace, Ind.

THE BULL CLASSES.

Heft was not the only hold that the five big bulls had on the affections of the onlookers. They were weighty enough but for the most part they were also typey, and made one of the most satisfactory arrays the breed has presented. Blackcap Star was the clear kingpin among them, with type of high degree, a masculine presence and thick cover, although Ben Hur stands closer to the ground and is quite massive, and particularly impressive on broadside view. In development of hindquarter the Missouri bull is superior. Barbarian of Rosemere is a heavy-crested, level-lined, well-fitted chap. Among the eight two-year-olds the average was perhaps not so high, but the two top bulls presented a strength not often mustered at the age. Blackcap Bertram is of admirable form, especially strong in accuracy of hind-end and set of legs, while Knight of Rosemere carries his unusual bulk on very brief underpinning. Both these bulls apparently had gratified fully an over-thirst before coming into the ring. There seems little excuse for such abnormally-distended abdomens as they carried. Earl Marshal holds his form smoothly and neatly.

The senior yearlings had a good head to the class, in the unusually smooth Blatant, and the six sappy junior yearlings produced the grand champion in Epistos, a son of Undulata Blackcap Ito 2d. This is a bull fashioned much as the name of his sire would suggest. He is decidedly on the blocky order and very neatly finished fore and aft. The Caldwells came into the bull championship with all the winners except the two calves. Inverne of Rosemore is taller and about as smooth and fairly level in his top line, better in this respect than Pilot of Denison. The senior calves were a splendid lot and presented a problem in type which was solved hardly to the agreement of the talent. The judge said that Blackcap Poe, the largest of the company, a youngster of exceptional shapeliness and quality, should either be first or last on account of type, and he left him last. Incidentally he is full brother to the bull that went to the Ames Plantation in Tennessee at $5,000, but that is neither here nor there in the ringside estimate which ran quite distinctly in favor of recognition of Blackcap Poe. A capital bull gained the blue—Belmont A, about as true in his lines and as level of back as they make them. He has not much the edge on Enlate when it comes to trueness of lines, but is his superior in tail-head finish. The winning junior bull calf is a rare one, of much scale and bulk for the company and rounded out into accurate doddie conformation. Killum is extremely nuggety in build.

THE FEMALES.

Striking as were the bull classes still more imposing were the rings of females. When thirteen such aged cows have foregathered in an American showring is not known to the breed followers. But the aged cows were not the only ring of superlative excellence. The uniformity from matrons to babies was such that even the most partisan of the ringside deserted their own favorites until the blacks' fate was settled.

Pride Petite came out in the same mellowed form that carried her to the numerous purples of last season, and although Battles' Quissy of Meadowbrook showed an equal spread of frame and a thicker meated top, the bloom of the veteran carried her through. Four richly muscled cows from the Escher herds followed with a Battles cow of similar type in ahead of the last one. The differences were all of degree in this quintette, the type being uniform. The reward of the smooth-formed meatiness in the Escher entries was found in the two-year-old class where first and second fell to Belle's Eclipser and Elassonia Erimia. Pride of Autumn has scarcely as uniform lines but a mellowed quality, while less forward was the entry from the old McHenry herd, shown by Mr. Frank.

In the younger classes a hand lens was almost necessary to discern the differences. If seven animals more nearly alike assembled during the course of the fair than the winners in the two-year-old class, their story will remain untold. Kensington Lady E. captured the blue, a thick-muscled killer's type, while Blackbird Velvet belied her name in nowise as far as finish could be discerned. Eritus 2d topped the junior yearlings, a thicker block than even her calf record promised. If a pimple marred the smoothness of Escher's Euso McHenry 52d, it was at an inaccessible point, for seldom has such a perfect expanse of black skin covered a doddie. Another outstanding type was Erica Eudora, the leading senior heifer, while her train of followers rivaled any of the predecessors, but all stood back when Battles' Queen of Rosemere 5th came from the junior calves to the junior championship. Queen is the first daughter of Barbarian of Rosemere, and if a perfect black, a fine spread and depth, and an unexcelled evenness of lines mean anything, his future as a sire is assured.

THE GALLOWAYS.

Three herds of Galloways made up a quality show, but there was no high spots. Choice Master, the Croft aged bull has begun slightly to show his age, but he was an easy winner over Swigart's Stanley Orthello. The champion male was found in Swigart's smooth lowset two-year-old, the thickly meated Myrtle's Standpatter. Ralph of Greenbrush, the junior calf that was junior champion, is a breedy youngster of good scale and lines, but not so forward in flesh as might be desired.

Two champions of other years came forward in the aged cow class, Daisy Dimple and Nellie Melville, but both bowed to the low-lined neatly-turned Ideal of Maple Grove. Some very attractive females headed the younger classes, but again the junior calf won secondary honors. Luella of Greenbrush is a very thick youngster, of even lines, and smoothest turn. Prof. W. H. Pew, Ames, Ia., placed the ribbons.

THE POLLED DURHAMS.

A very good Polled Durham show featured the first days. True Sultan continues to develop into a rotundity of form that stamps him one of the best Polled Durham bulls yet exhibited, a real good bull of any breed. He is very lowset and mellow enough to satisfy the most fastidious judge. The sensational young bull was the junior yearling Roselawn Marshal, a bulky roan of very precious spread. Some differences of ringside opinion developed in the yearling class, the lightly fitted Sunny Sultan left outside the money being favored by many for the blue award.

The aged cow Sultana is a mellow fleshed evenly covered matron of extremely desirable type. She met a very lowset neat rival in the two-year-old Oakdale Ruth 3d, but finally earned the championship. Two very beefy daughters of True Sultan headed the senior yearling and senior calf class respectively, the calf finally attaining junior honors. Professor W. H. Pew distributed the prizes.

THE RED POLLS.

Somewhere there may have been better Red Poll exhibits, but never any of greater interest. As a demonstration of blending blood lines and careful breeding, the progeny of Teddy's Best offered remarkable advantages. Over 60 per cent of the animals in the show were either immediate progeny or second generation descendants of this bull, and the different ideals developed in the different herds gave interesting information on the hereditary possibilities transmitted by this sire.

In the aged bull class Teddy's Best himself met two sons, Teddy's Charmer and Teddy's Perfection, and a grandson Royal Charmer. Teddy's Charmer finally came out on top, as a result of his smoothness and superior bloom. The old bull himself stood second with Teddy's Perfection third. There was considerable discussion over the merits of the two top bulls each having had the decision at a previous fair. The dual-purpose type was better illustrated by the older bull. The junior champion was a grandson of Teddy's Best and a son of Teddy's Perfection, a deep-lined, dual type of great scale and forward development.

The female competition was keen. Two excellent cows of the dual standard came to the fore, and the ranking of Constant over Jean Duluth Brunhilde evoked much ringside comment. Constant is a well-balanced cow in every respect, but lacked the fit and milky character of Brunhilde. The two-year-olds presented a similar proposition when the strong-framed Caroline went above the more open-middled Jean Duluth Purity. The differences were greater in this case, however, the second heifer being quite dairy in makeup, with a record of over 200 pounds of fat in four months, thus far the highest two-year-old record in the breed. In the younger heifer classes the progeny of Teddy's Charmer had the lead, his senior yearling Louise gaining the junior purple. Elliott Davis, Lincoln, Neb., made the allotments.

THE STEER CLASSES.

The boy came into his own as a cattleman in a special baby beef competition designed not only to capture his attention but to reward his efforts even more completely than those of the mature cattle exhibitor. The Iowa Beef Producers' Association, in collaboration with the extension department of the state agricultural college, instituted last year a baby beef contest, in which each boy selected a seven months steer, put it on full feed, kept records of its rations and gains, and prepared reports on the results. The final decision among the 250 entrants still remaining will come in November and will be based on the rate of gain, economy of feeding, killing values and the written reports. In order to give the widest publicity to the work several county fairs have offered special prizes in order to have the cattle exhibited. As a further stimulus twenty prizes were offered at Des Moines, ranging from $50 for first to $10 for twentieth and totaling $400 for an exhibit of these animals. Only thirteen steers finally stood in the ring before Prof. Pew of the Iowa State College, but they demanded a full forty-five minutes of attention. Seven Angus, five Shorthorns (two of them purebred) and one Hereford foregathered and the purebreds finally landed on top. Some excellent animals were shown, as may readily be inferred from the fact that the eighth-prize steer won fourth in the open class.

THE DAIRY CATTLE SHOW.

THE HOLSTEIN-FRIESIANS.

The breed of Holland made a show that rivalled both in quantity and quality the leading beef breeds. One hundred and forty animals met the scrutiny of Dr. O. P. Thompson, Waterloo, Ia., and some of the classes were so large and so excellent that inevitable difference of opinion arose.

The aged bull class presented a strong contest between Hengerveld King and Paul Calamo Korndyke, the strong back, evenness and clean-cut frame of the former finally gaining ascendency over the satinly-finished and open-framed character of the latter. A younger bull less spread in middle, took third, Paul Calamo Korndyke 14th. The flashy class was found in the two-year-old bulls, and was pronounced by dairy cattle followers to be the strongest two-year-old class ever shown. King Segis Johanna Ormsby not only showed the stretch and finish necessary to win, but also captured the grand championship. The second and third bulls were much of the same stamp, but fourth and fifth went to two upstanding massive-framed but clean-cut Iowana bulls that would have been quite acceptable winners had their style been favored by the judge. The winning yearling was a different type from either of the older bulls, most of the ringside favoring the strongly-developed, open-framed second-prize bull, King Burke Pontiac Segis. The senior bull calves were numerous, twenty-one lining up for position, and many excellent ones went back to the barn. Roberts Abbekirk Pontiac is a large strong-framed fellow, not so smooth and breedy as the second bull Iowana Burke Fayne. The junior calves were only nine, but their problems were nearly as difficult. Skylark Pontiac Betting won the blue for the Galloway Messer Farm, a typical dairy youngster of the stamp that suits Holstein breeders.

The twelve cows made the finest show found in the dairy breeds. Two National champions competed, both dry at present, but were able to obtain only third and fourth. Beulah Shepard Empress and Princess Hengerveld 4th, two young cows, were placed above them, their superior finish and functioning mammary system giving them the preference. All of the winners had excellent veining, and any of them would have proved most acceptable at the top. Still better character was prevalent in the three-year-olds. Jewel Walker Gerben of Cedarside is the $2,000 cow purchased by Galloway Messer Farms from C. B. Nelson, and as she captured the championship, she justified her valuation. For capacity, veining and quality she outshone any other female of the breed. Iowana captured both yearling firsts on daughters of Sir Johanna Fayne, while the first-prize senior heifer calf was a remarkably strong-framed capacious youngster, Wayne Bonheur DeKol. The group competitions were keen, Iowana taking three firsts and Galloway Messer Farms two.

THE JERSEYS.

The rings representing this channel breed were not as tightly crowded as others, but the keen-edged competition supplied a zest that can never come from numbers alone. Adjudication rested in the hands of Will Forbes, Waterloo, Iowa, and several tangled situations required unraveling before the alignment was perfected. Stockwell's Champion has the aristocratic bearing common to most of his kin, and presented a bold masculine capacity and razor-tempered quality that overwhelmed his bulkier rival, Noble's Fawn Prince. A very pretty trio from Mrs. Fabyan's Riverbank Farm jousted among themselves for two-year-old honors, the decision finally falling to Fern's Noble of Riverbank, a bull of distinctly Island stamp. The yearling and junior champion also came from this farm, a precocious youngster with most acceptable mammary suggestion. Combination's Premier Jr. is a type of bull that falls well within the pattern established in the preceding classes, but he had a hot fight with Blue Mundi, the oldest son of the Champion Ocean Blue at this fair. The younger classes in general bore tribute to the influence of this sire for the senior bull calves were headed by a son, and the senior heifer calves showed daughters in first and fifth place.

The aged cows developed four good ones. Manor's Blossom is outstanding, all of the elements of Jersey feminine ideals being hers in bountiful measure. She excelled her rival, Eminent's Grace, by a slightly more accentuated definition of line and a greater sweep of middle, but in the mammary system Eminent's Grace yielded to none. Raleigh's Little Torment is a pretty three-year-old and bore promise of an industrious future, but neither she nor her strongly formed stablemate Raleigh's Missie G, the winning two-year-old, could overcome the matronly assertiveness of Manor's Blossom. The younger heifers were most attractive. Underwood's Lady Bashua; Mr. Young's three juniors headed by Raleigh's Cream Pot; Ocean Blue's Cowslip, the capacious senior heifer calf; and the precociously spread Frederick's Lady Marjorie from among the junior calves, but the fresh femininity of Lady Bashua prevailed.

THE GUERNSEYS.

Guernseys were imposing. From the Waterloo herds of W. W. Marsh came some of the finest types that have yet stepped into an American showing, many of the younger being of his breeding, while Jean Duluth farm presented some impressive working types to furnish keenest competition. Hayes Cherub 2d came back to champion honors without the slightest difficulty, after passing through the National

Dairy Show quarantine. Hartley's Gold Lassie's Julian, a bull barely outside of the limits for a two-year-old, was second in the aged class, and defeated the two big Wilcox & Stubbs bulls on a nerved quality that is quite attractive. The winning two-year-old, Cherry's Memento of Iowa, was presented in as beautiful bloom as it is possible to attain, but the merely curious would have liked to see him matched against his magnificent boldly masculine stablemate, Ladysmith Cherub, that came out in the get of sire class as a tribute to the champion Hayes Cherub 2d. The yearlings were headed by a Jean Duluth bull from a 729-pound butterfat dam. Working capacity stood out in every line. The closest contest of the day occurred in the senior bull calves, the big milky Marathon Rose King opposing the cleanly moulded stylish Flora's Memento. That show character finally carried the day for the Marsh bull and brought him to junior champion illustrates how near one can come to the coveted honor and yet be far from it.

Hayes Wena 4th set a type in the aged class that established the winners in most of the female rings. As perfect a score card type as has been in the Guernsey shows is illustrated in this wonderfully veined level-uddered cow, and that she should be ultimate champion was a foregone conclusion. Polly of Hillstead is a more capaciously ribbed cow viewed from above, but the refined Guernsey character and extended middle of the winner were too much for the Illinois cow. Hayes Snowdrop 6th was the less mature image of Wena in the three-year-olds, but in the two-year-olds the Marsh ideal was less successful as a marvelous mammary spread and constitutional capacity set it aside. Jean Duluth Coronet is the productive type that fills the eye of the practical dairyman under every condition. A very sturdy deep orange and white heifer from the same herd headed the senior yearlings, but the refined neat-turned stamp returned to the top in the juniors. The junior champion female came from the senior heifer calves in the capacious Grecs' May Rose from Jean Duluth, but this fact did not prevent all of the dairy talent present from according with the view that the junior heifer calves were the finest evenest ring of youngsters ever assembled in American showyards. H. G. Van Pelt, Waterloo, Iowa, distributed the ribbons with accuracy and dispatch.

THE AYRSHIRES.

While some of the Ayrshire classes lacked the outstanding entries that have featured previous exhibits, the evenness of the rings more than compensated. Eighty-three animals from four herds passed under the inspection of James Watson, Kansas City, Mo., during the two days of the show and presented some complicated problems for solution. Bargenock Rising Star assumed the championship burden for Adam Seitz, a burden borne acceptably for so many years by his sire, Bargenoch Gay Cavalier. Auchenbrain Good Gift, second in the aged class, is a bull of leaner temperament, but scarcely as capacious in line or masculine in carriage. Another son of Cavalier headed the two-year-olds, while the younger classes were well filled with the progeny of this sire. In fact over thirty-five per cent of the entries were products of his loins, in either the immediate or second generation progeny. Cavalier's Lord Rosberg, a son that won junior championship, is a big stretchy bull of excellent type, that has not ripened into the bloom of some of his rivals, but that promises much in the future.

The seven aged cows made an excellent line up as far as type was concerned, but one or two had suffered slight disabilities in the milking machinery as a result of strenuous showing. Imp. Kilnford Bell 4th assumed the fore with little difficulty, in spite of the fact that she had just calved twins, and was not yet down to working shape. May of Hillcroft, the wearer of the red, was a different stamp of cow, more compact and broader sprung, with nearly as nice a mammary system as her rival. The three-year-olds and two-year-olds were both pretty rings, the scale and forwardness of the latter being particularly appealing to the rural American eye. Perhaps the most attractive class of all was the senior yearlings, from which came the junior champion Nora Spencer. This youngster was the sweetest and most attractive of all the Ayrshires shown, but, although a most forward type for her age, she was forced to yield grand champion honors to her more experienced rival, Kilnford Bell 4th.

THE BROWN SWISS.

Competition in the primal breed of dairy cattle was limited to two herds and the stress of remunerative toil in the dairy sat heavily on several of the older entries. Merney's 2d Son, at the head of the Ayers herd, was an outstanding winner among the older bulls, and decisively vindicated his position when his son Merney's Nephew drew the junior purple. Several two, three and four-year old cows showed that buxomness of line that portrays the continental bovine ideal, but the quality and tempered dairiness of Ayers' Browney B finally achieved the supreme award. Hefty gained the purple for junior championship with a particularly well nourished and developed junior yearling heifer, Maud 2d. The ratings were made by Hugh G. Van Pelt, Waterloo, Ia.

THE SWINE SHOW.

The show in the swine department was affected somewhat adversely by the National Swine Show which will come later at Omaha. There was an unmistakable feeling that many of the best hogs were being held up for this later exhibition and that breeders were taking care to have their "first lines" in fine fettle at that time. In spite of this there was a good show on the grounds, an official count checking 3,018 hogs.

In spite of the hot summer the hogs came forth finely fitted. Even the sale hogs were in attractive clothes. Evidently breeders foresaw the keen demand which would exist and made special arrangements to accommodate it.

It was an ideal week to show hogs. The cool wind on several days together with moderate temperatures during the others tended to make life endurable and more pleasant for the porcine contingent. Most of the judges worked with alacrity and by Tuesday noon the judging was practically completed.

There was a time when the large-type hog found no friends with the Iowa judges. That times have changed was clearly evidenced in looking over the winners in each class. Apparently the question now confronting the breeder is only one of how far the big type will be carried before the limit is reached, and those who a short time back were still fighting for the old standard have gracefully fallen into line.

Seven hundred and three entries of Durocs ensured full rings for Wilson Rowe to appraise. Men who have seen the Duroc-Jersey show at Des Moines for years thought quality was scarcely up to that of some previous exhibitions. There seemed to be a decided winner in each class however. Waltemeyer's Great Wonder was first in the aged boar class and grand champion. While not so large as some he carries many indications of ruggedness and is essentially of the popular large type. Perhaps the strongest show was made by the junior yearling sows, of which some 30 were driven out. This made a magnificent group and was well up to any class ever before seen in the pavilion.

The championship went to the Genoa Indian School on Critic's Perfection, a three-year-old entry. This victory was of interest in that Noble Bennett, an Indian lad of 18 summers, had done all of the fitting of this herd. She is the daughter of Critic B. Four of her 1915 pigs made winnings in the yearling classes. She appeared in the ring in a highly fitted state but smooth of body as a 6 weeks pig.

Length, bone and scale—such words best tell the story of the Poland-China classes here. It was decidedly a big-type show and the judge, Thomas Shattuck, adhered quite consistently to the hogs with most scale in making allotments. Long Big Bone headed a fair class of aged boars, and was handily at the top. His 1,085 pounds, carried in a well balanced manner on excellent-set limbs made him the very popular choice for championship honors. Below first place ringside talent differed with the judge. Smooth Big Bob, the junior champion of the show, was a strong winner in his class and might in time develop to the equal of the aged hog, possibly excelling him in smoothness.

In aged sows Ike Overton proved invincible and captured both the blue and red, the winner of the former gaining the championship later. She possessed a wonderful underpinning, her pasterns being short and erect with toes set snugly to each other. She would tip the beam at 850 pounds. Yet she handled herself with ease.

The Berkshires appeared in much greater strength than in recent years, as this show has rather been neglected of late by exhibitors of this breed. From the names on the prize list, made by N. H. Gentry, Sedalia, Mo., it may safely be concluded that the breed's claims were stoutly presented. The senior and grand champion boar, Rival's Iowana's Baron, was an outstanding winner, a boar of decided show yard character. The junior yearling boar from Kansas revealed that quality which wins, while the admirable senior boar pig from Illinois gained the distinction of junior and reserve champion. The home state herd was stoutly equipped in the aged sow class, gaining chief honors and the final grand championship with Iowana Peaceful 2d.

While not up to the Chester White record show of 1915 in numbers it is safe to say that Des Moines has never before entertained so even and excellent a display of the breed. There were no inferior hogs in evidence. Of the 485 head there was scarcely a pig that was not nicely fitted. It is a marked improvement in feet and pasterns which has been credited to this breed in recent years. Excellent indeed was the underpinning at this show. William A, champion at Hamline in 1915, headed the aged boars and was made grand champion. As a two-year-old he crowds the half-ton mark. Nagle captured both sow championships. The aged sow was own mother to the first-prize senior pig. This three-year-old sow, International by name, raised a February litter but looked none the worse for it.

With tremendous strides the Hampshire hogs continue to increase in cornbelt show circles and pastures. When so large an exhibit of the breed is seen as was in evidence at Des Moines it seems hard to believe that the first public vendue west of the Mississippi occurred less than five years back. A marked improvement in uniformity, scale and quality has occurred during these few years, marked evidence of which was furnished at Des Moines. Cherokee Pattern, a hog of great scale, was a satisfactory champion, although this was his initial appearance in the ring. He comes of good winning blood. The Messenger sow Scottish Girl 4th is a true matron, having raised a full litter of 12 husky spring pigs. She is heavy in pig again. While not the largest she is a true specimen of the type upon which the Hampshire men have fixed.

THE SHEEP SHOW.

Many evidences indicated that the past year has been a year of prosperity for Iowa sheep breeders. Ring-side talk among the breeders has it that this year's show is the best ever held in the state. At past shows were more exhibitors from outside the state who made excellent exhibits of imported and home bred sheep, but this year's display was much more largely composed of sheep bred in Iowa. There were a number of new exhibitors from Iowa this year but two or three of the old exhibitors from outside the state were not present. In number of entries the show outranks its predecessor by a noticeable margin. Demand for rams and breeding stock was excellent and especially for Shropshires, Oxfords and Hampshires. Breeders report materially higher prices than last year. Exhibitors at this show represent the states of Ohio, Wisconsin, Missouri, Nebraska and Wyoming. The high prices of wool and record level prices for lamb and mutton have brought Iowa rapidly to the front as a finishing ground for western-raised lambs. With an acute shortage of feeder lambs it looks like a safe prediction that more lambs will be raised on Iowa farms. The sheep breeders of Iowa are improving their flocks and are well prepared to supply an increasing trade.

The sheep in all classes were not too highly fitted—a thing almost impossible under past summer temperatures. Practically all exhibitors brought more sheep than they had planned. Classes of ram and ewe lambs were live features of the show. Iowa breeders demonstrated that they can produce lambs of high excellence in type, fleece and quality.

Prof. F. R. Marshall, of the Department of Agriculture, Washington, D. C., passed on all the breeds. His decisions were well received by all exhibitors.

The Shropshire show was very uniform in all classes and the quality of the entries was a topic of ringside comment. Fewer imported sheep were shown and a greater preponderance of Iowa-bred entries. The Hampshires made a good show. The classes were small and most all the winners were from outside the state.

The Oxford show brought out some good sheep. Iowa breeders of Oxfords have kept size, bone, flesh, and fleece well in mind and as a result sales were numerous. It is noteworthy that the Oxford show was largely of Iowa bred sheep.

The Cotswold classes were comparatively large and some very excellent specimens came into the ring. The main competition was between out of the state breeders.

The Lincolns from the Arnold flock had no competition. This is the first year that a sheep-shearing contest has been held. It furnished both amusement and educational features. In another year many more entries will be made and this feature can be made a permanent part of the show. The largest crowd of the entire show gathered to see the contest. Daily demonstrations by an expert in shearing sheep and tying the fleece would be a good addition.

The first wool show was a good start for a better event later on. There was enough interest shown in the few entries made to warrant the belief that the rest of the exhibitors and other sheep men will show their choice fleeces another year. Prof. Marshall suggests that the wool exhibits be placed along the ring side and judged at a set time as the classes of sheep were.

THE DRAFT HORSE SHOW.

Those who have doubted the ability of the American draft horse breeder to assume a responsible productive position at the close of the war should have visited the horse rings of this fair and had their doubts evicted. Some of the best representatives of the continental draft type ever exhibited at this fair were present this year, and the bulk of the winners claimed America as their place of nativity. The Clydesdale breeders have already proved their independence of the mother country so their high-class exhibit was taken as a matter of course, but the strenuous efforts of several Shire breeders gave earnest of the possibilities inherent in their stock already in America. What part of this improvement is due to the extreme economic situation is not possible to estimate, but the student of American horse breeding previously to 1910 can discern the inspiring hand of J. H. S.

Johnstone, originator of the draft horse futurity, and can recognize a stimulus therefrom that ante-dated the war by several seasons. The foundation of draft horse production among cornbelt farmers lies in the futurity, and much of draft development and of evolving ideals finds root in this excitant to cart horse interest.

THE PERCHERONS.

Approximately two hundred representatives of the most popular breed of draft horses in France tested their mettle during the forenoons of the show with a result distinctly encouraging to American breeders both big and little. Longer lines of animals have sought the judge's favor in single classes at previous circuit openers, but never has there been greater uniformity throughout the classes nor a better balance from aged horses down to foals. American Percheron breeders can feel well satisfied with the first fruits of their enforced separation from the Perche and can cite the full molded forms of 170 American-breds as certain refutation of the charge that the American environment lacks some factor necessary for the fulfillment of the hereditary promise. The cornbelt yielded horse after horse that fittingly measured this accomplishment and that would have contested the best of the imported animals of other years.

THE STALLIONS.

Lagos still reigns among the aged stallions. The Panama-Pacific champion came forward in superb fit, and while successive showings have told their story when he is in action, yet his massive masculinity ultimately gave him preference over the more active Lycee. Majorat, a stablemate of the winner, came third, but he was of a distinctly different stamp from the two horses above him. The three-year-old class was almost a sweep for the Keota stables, the only intruders in the prize list being the beautifully turned Iocarno, product of the champions Carnot and Iolanthe, in third place, and Koda Besigue, a Crownover horse of well-nigh perfect foreleg, but less finely chiselled at head and neck, in fifth. The Keota rivals in first and second each had admirers, the massive spread of top of Nandou being offset by the stretchy proportions of Keota Insight. However the former found the favor of the judge, A. L. Robison, Jr., Pekin, Ill. Awards stood the same among the two year-olds, although in this case the stretchy frame won. Fairhope is a big brown of exceptional bone and top and a swinging walk that was appreciated from the start. The gray Keota Jalap stood above him for some time, but ultimately waived position to his stablemate. He has a wonderfully matured stamp with a flint-like quality that American breeders are coming to appreciate, while his masculine front and keen edged temperament were most appealing. Massiveness was not his forte as compared to Fairhope, so he failed of the blue.

THE STALLION FUTURITY.

Twenty-two yearlings lined up to contest for fourteen places. Some very exceptional youngsters were assembled, although the type was perhaps no more uniform than in previous years. Lagos buttressed his right to the ultimate stallion championship by sending forward a son, Laynot, that in quality, action, and well-set limbs brooked no denial. A very soundly turned black of Dunhams, Karnac, was second. He was scarcely as forward in flesh and fit as some of the other horses in the ring, but withal held that promise of firmly knit thriftiness that hinted at future battles, not all one-sided, with the winner. Carvalentine is a big, well molded youngster, while the gray Pompey had a hardened muscular expression that bespoke great future service. Space forbids a recital of further excellences in the next ten places. That they were present to a high degree in each individual was obvious to any observer.

THE MARES.

The mares also had their bright spots but the numbers were not so great. The blood of the historic Pink again found championship expression in the massive, flinty Pink Brillante, a gray mare robbed of motherhood by a wire fence in which her progeny became entangled. Only four weeks separated the suckling period from the show, hence bloom was not yet attained, but the type was there. Another big-framed gray headed the mare and foal class, but the maternal duties told too severely on that nicety of finish that bespeaks the champion. The beautiful black Carnante, futurity premium winner of two seasons ago, headed the three-year-olds. The futurity of last year contributed the two-year-old winner and reserve champion, Dunhams' sensational Turquoise. She appears this year a stretchy black of brilliant action and outstanding broodiness.

THE FILLY FUTURITY.

Twenty-three fillies brought twenty-three visions of victory with them, and the nine whose illusions were shattered were of such merit that predictions for another year were absolutely unsafe. The two top fillies were of the same stamp and of no outstanding difference, although they came from two stables. Patience is a big upstanding filly with good underpinning and clean cut quality; so is Keota Clarice. That one should win rather than the other required a study of each; the story cannot be presented in mere words. Carcile is a compactly knit black of the thrifty stamp that portrays service. That she had many supporters for supreme honors is obvious when one realizes the difference in type between her and her conquerors. Orpha, in fourth, was a big thick mare that lacked the professional fitting, but that would catch any farmer's eye as readily as the others.

In the groups interest centered on the relative merits of the Carnot and Jalap colts in the get of sire class, but Carnot finally won on the uniformity of stamp in his progeny.

THE BELGIANS.

Whatever may be the condition in the country at large as regards the Belgian breed, Iowa seems destined to take the place of the despoiled nation in supplying the draft horse interests of the United States. One hundred-and-fifty-four animals were on exhibition and never in the palmiest importing days was there so much quality or uniformity displayed. Of the fourteen exhibitors present all but one were from Iowa, and most of the men would be called small breeders rather than large, so far as advertising and professional showing are concerned. That Iowa should have tried stallions of two of the principal strains of modern Belgian breeding puts them in a unique position for the future, as the Bayard blood in Farceur, and the Indigene du Fosteau blood in Alfred de Bree Eyck offer great recuperative possibilities.

The awards were made by Alex. Galbraith, Edmonton, Alta., with the assistance of John G. Truman on the futurities. The aged ring brought out twenty-four stallions, headed ultimately by the deep chestnut Alfred de Bree Eyck, champion at the Iowa spring stallion show. He is one of the soundest-legged Belgians ever seen, possessed of beautiful hoofheads and ankles and massive-framed in every detail. It may be questioned if a more thoroughly satisfactory horse of the breed has ever been shown. Paul de Roosbeke was an attractive second, a deep bay of more popular line in the mother country than the winning horse, but not quite upstanding enough for American ideals. Third came the enormous Combatant de Groty, the bulkiest horse shown in any of the breed contests. The three-year-old display was limited to the stablemates Irvinedale Jean and Irvinedale Rowdy. Jean won the futurity two years ago and was perhaps the more attractive horse as far as quality, stretch, and head and neck are concerned, but the powerful back, loin and croup of the chestnut Rowdy, coupled with his close-knit frame finally gave him the preference. Jupiter, a heavy-boned, well-finished chestnut of Goods, headed the two-year-olds, closely pushed by the rather better fronted Indigene of Lefebure's.

THE STALLION FUTURITY.

Paul de Roosbeke and Farceur jousted quite joyously both in the stallion and mare futurities, regarding their respective abilities as sires. That Paul had the advantage in the stallions only emphasized Farceur's advantage in the mares. Joubt de Roosbeke is a massive chestnut, rugged in line, strong in bone, and bold in action. Paramount Wolver, the roan Farceur colt next to him, is smaller, and neater finished, being exceptionally clean cut throughout. A still smaller bay stood third, Payton's Choice, a velvet-finished fellow of wonderful quality. Another Farceur colt stood fourth, not quite as boldly formed as his rivals, but of the same stamp.

THE MARES.

The mare classes were as exceptional in merit as the stallions. Three imported mares stood at the top among the yeld females, while the champion Anna du Balcan headed the mare and foal class. A stable mate of Anna headed the three-year-olds, while in the two-year-olds three Farceur colts took first, second and fifth, the chestnut winner Lista ultimately becoming reserve champion.

THE FILLY FUTURITY.

The sensation of the Belgian females came in the futurity class in the red roan Paramount Lola, as perfectly formed a draft mare as was shown by any breed. Five roans took the first five places in this ring and their supremacy was unquestionable. However, when the ten winners had been cut out from the class, the other ten formed a show as good from one end to the other as was found in any previous Belgian futurity. Jupiter Belle, the second prize, was an upstanding mare of sound frame and true gait, but not quite so well balanced as Lola. Third, fourth and fifth partook of the same type, but failed to the ones above them only in some slight detail of form. The 1916 filly show bids fair to be historic.

THE CLYDESDALES.

Two features shone bright in the 1916 Clydesdales. One was the uniform excellent character of the exhibits, and the other was the accurate judicial estimates of Andrew MacFarlane, Palo, Ia. Seldom has so wide a range of contesting exhibitors been so thoroughly satisfied and rarely has the type established been so closely adhered to. As evidence of the appeciation of his work, the exhibitors petitioned the fair officials to obtain Mr. MacFarlane's services over a period of years.

The Revelanta horse Samuda led the aged stallions, closely pressed by the bay Royal Knott, a horse of much character and a rare masculine stamp. Samuda took the honors finally on his style of going and slightly greater uniformity, while third and fourth went to two smaller horses possessed of that quality, finish and action that distinguish the Clydesdale. The sensation of the show was the three-year-old Hope's Pride, futurity winner of 1914, and first-prize two-year-old of last year. He has done well, and promises satisfactory showing as a sire. Baron Kilmarnock, his class rival, was a more finished line of a horse, with exceptional quality and cleanness throughout. A colt of type similar to Hope's Pride headed the two-year-olds, his lines, and action being of the accepted style.

THE STALLION FUTURITY.

While in the aged class The Pinnacle stood just above Prince Cedric, in the yearlings, their relative rank was reversed as judged by their sons. Prince Fickland, the wearer of the blue in the futurity, was a notable stamp of a colt, level-topped, attractive in head and neck, neat in way of going, and possessed of the best feet and pasterns in the class. A very strong-bodied son of General Davidson came third and a big-framed Pinnacle colt captured fourth.

THE MARES.

The mare classes were even more interesting than the stallions. Princess Mae, the winning yeld mare, was once a futurity winner, and is the big broody type that appeals to the Scotsman's heart. Osco Beauty is as capacious, but not quite so trimly set as her successful rival. The champion came from the three-year-old class, as a sweet-lined, cleanly-chiseled and femininely-turned as could be desired. Lady May is a daughter of The Pinnacle and shed considerable lustre upon the ten-year-old sire's record. Another well-fashioned filly, much on the type of the champion stallion, came from the two-year-olds, the Young Criterion mare Sweet Marie. She had little difficulty in fighting her way to the top of the bred-by-exhibitor class over the futurity champion and gave Lady May a hard rub for supreme female honors.

THE FILLY FUTURITY.

Not content with winning the stallion futurity with Prince Fickland, the progeny of Prince Cedric came forward again in the filly futurity. Princess Alice is a mare on the style of Sweet Marie, possessed of beautiful straight limbs and a deep well-set hock. Two very pretty Pinnacle colts stood second and third, the younger chestnut being particularly satisfying. A very drafty pair stood in fourth and fifth places, the superior advantage of top possessed by Miss Roberta being more than offset by the powerful underpinning of Maid's Darling.

The get-of-sire show was inspiring with such sires as Baron's Hope, Prince Cedric, The Pinnacle and Young Criterion competing. That they finally stood in the order named was almost foreordained by the awards, but the uniformity of the Prince Cedric offering was enough to give the winners anxiety.

THE SHIRES.

The Shire ring missed seriously the entries of Trumans' Pioneer Stud Farm, the stallion classes in particular suffering from their absence. Last year's second-prize stallion, Dunsmore Sentinel, headed the aged class, this year, but as he had just come from his season's stand, he neither did justice to himself nor his award, from the showyard standpoint. The stronger class in the male section was the two-year-olds, from which the clean-limbed, roundly-turned champion came. Rock's Golda Conqueror is a deep brown that excelled his class rivals on his square-set legs and straight-lined walk. An excellent foal came to the front, and the two two-year-olds and foal both stood ahead of the futurity winner in the bred-by-exhibitor class.

THE STALLION FUTURITY.

Eight yearlings aligned themselves in the stallion futurity to receive the attention of Peter Hopley and R. B. Ogilvie, Chicago, who for eight years has judged the breed at Des Moines, Mr. Hopley having been appointed to aid in the two futurity rings. A strongly welded gray, Sir Buscot, took first over a compact, deep-chested brown of exceptionally sloping shoulder. The third colt was another brown of rather more bountiful proportions, but more loosely built than the winner. Two very large-framed youngsters stood fourth and fifth, well grown, but scarcely as sweet in the legs as the first three.

THE MARES.

The mare classes on the average were much stronger than the stallions. Considerable interest was evinced in the rating of the yeld mares, the more rugged Wellington Sunbeam finally taking the award from the nicely-turned, quality sort Pine Krest Primrose, heroine of the 1913 futurity. The mares and foals were a strong-boned group but maternal stresses forbade extra-class honors. The strongest show outside of the futurity was found in the two-year-olds where two exceptionally clean-cut browns took first and second. A bay, less rotund, claimed third for the McCay & Fowler stables.

THE FILLY FUTURITY.

The champion female of the show was uncovered in the yearling class, an outstanding gray of scale and quality and possessed of a stylish way of going that was quite captivating. Edgewood Princess was second, a strong-boned bay of very deep rib, while the well-set, strongly coupled Rampton Clara came third. The remaining mares were somewhat smaller and less forward, but they were of a stamp quite superior to the yearling males. In fact the mare show was attractive in every particular.

IOWA STATE FAIR BREAKS RECORDS.

(The Iowa Homestead.)

With ideal weather conditions, record-breaking attendance and exhibits more varied and excellent than ever before, the 1916 Iowa State Fair will pass into history as pre-eminent in the brilliant list of sixty-two such annual exhibitions which the state has held. Never was there a fair which, from start to finish, found all conditions so auspicious or which brought a readier response from the people of the state, who flocked to it in record-breaking number. When the gates were closed on Tuesday night, with three full days of the fair remaining, the total attendance had reached 204,136 which was 51,758 in excess of the mark at the same time last year. With Wednesday's attendance in the neighborhood of 45,000 and Thursday and Friday still remaining, with good programs provided, there was every reason to believe that fully 300,000 people would pass through the turnstiles by the time the 1916 fair came to a brilliant conclusion Friday night. While the attendance records were thus being shattered, the monetary receipts were large in proportion. At the close of business Tuesday night the total amount of money taken in was $142,513.34, which was $38,390.23 more than the receipts up to the same time at the 1915 fair. The fact is that Iowa is enjoying a year of unparalleled prosperity and with crop prospects never better, the citizenry of Iowa responded to the invitation of the state fair management in numbers and with enthusiasm never witnessed before. Confronting a harvest of bumper crops, with corn vastly superior to what it was last year and with hay and oats adding many millions to their annual field-crop production, the farmers of Iowa were only too glad to "knock off work" for a few days and come to Des Moines to enjoy themselves and to see the fruits of their labor displayed, so that all the world might realize and marvel at the agicultural supremacy of the Hawkeye state.

Never were weather conditions so good for any state fair as they were for the 1916 Iowa State Fair. Up to the time this is written (Wednesday night) not more than the merest trace of rain had fallen since the fair officially opened the Friday preceding. Bright skies and low temperature prevailed, there being none of the physical discomfort attendant upon a high temperature which usually prevails during the Iowa fair. With the thermometer registering in the seventies and seldom getting above the 80-degree mark, the thousands upon thousands of visitors who came to Des Moines for the week were enabled to attend the fair in the greatest comfort. The weather conditions were also ideal for the aviation feats which have come to be such a popular number on the state fair programs. Last year Art Smith, the intrepid young aviator, was the hero of the occasion. This year his place was well taken by Ruth Law, a young and pretty aviatrix, who looped the loop, both by day and by night, with the utmost fearlessness, and who made her flights exactly at the time announced, an innovation welcomed by all the fair attendants.

There never has been a finer representation of pure-bred live stock at the Hawkeye fair than was found in the stalls, pens and paddocks this year. In horses, cattle, sheep and swine the showing was simply superb and the interest displayed by the visitors, as indicated by the attendance at the ringside, showed most plainly that live stock must be considered Iowa's basic industry. Entries were so numerous, particularly in the cattle classes, that temporary structures were utilized for stabling purposes, and this crowded condition should be remedied before the gates for another fair open. In the horse division interest is maintained at a high pitch, and an especial feature of this department was the large number of entries of American-bred animals. In certain classes there were as many as thirty or even forty entries and every individual of American breeding. Ringside comment indicated that the quality of the entries had not fallen off in the least because of the stoppage of importation. This means that American breeders are rapidly getting a footing and they give every promise of being able to produce as good drafters as ever have crossed the water. There never has been a time when men displayed firmer faith in the future of the draft horse business, claiming as they do that the tractor will eliminate the nondescript type and that there will always be an important place for a horse of good scale with enough quality to wear well. It is worthy of note that the exhibitors generally worked harmoniously with the authorities this year to prevent the spread of disease. Every hog entry, with the single exception of one individual, had been treated with serum before being shipped, and, of course, the individual referred to was treated by the authorities before taken upon the grounds. This means that hogs will go back home from the Iowa State Fair in a healthy condition with no danger whatever of spreading the disease that has always terrorized neighborhoods into which the return hogs were shipped. The officials of the fair are to be congratulated upon their success in convincing breeders of the necessity of taking this sensible precaution.

A new feature of the fair this year, and one which not only attracted wide-spread attention, but drove home its lesson in striking manner, was the cow-test exhibit, under the management of the Iowa State Dairy Association and the dairy officials of the Iowa College of Agriculture. A dozen cows were displayed, furnished by the Kossuth County Cow-Testing Association. The high cow in the Kossuth county test for the year ending August 1st was Lucy Queen Alcartra, a pure-bred Holstein, which gave 13,960 pounds of milk, yielding 554.6 pounds of butter fat in the year; the feed cost for this cow was $72.89; the year's profit was $120.27. Displayed alongside this cow was the one which was low in the Kossuth county contest, Belle, a grade Holstein, which gave but 3,101 pounds of milk, yielding but 108.9 pounds of butter fat; the feed cost was $37.05, the cow not making expenses, but being a loss for the year of 82 cents. These two cows—one returning a profit of $120.27, the other a loss of 82 cents—were displayed side by side and proved that it certainly pays to test and to keep books. Other cows displayed with these were Mercedes Jessie Alcartra, a pure-bred Holstein, which gave 13,762 pounds of milk, yielding 506.7 pounds of butter fat, giving a profit for the year of $108.18; Pond Lily Second, giving a profit of $6.37; Red Jersey, a grade Jersey, giving 8,999 pounds of milk, yielding 411.4 pounds of butter fat and an annual profit of $97.84; and Parsons Belle, a grade Guernsey, which yielded a profit for the year of $66.07. Across from these animals were a half dozen displayed to show the influence of pure-bred sires on the production of milk and butter. A scrub cow which yielded 4,588 pounds of milk, or 201.67 pounds of butter fat, was displayed alongside her daughter, which had given 6,822 pounds of milk or 283.75 pounds of butter fat, an increase over the dam's record of 49 per cent for the milk and 41 per cent for the butter fat. The exhibit was striking throughout, and it is safe to predict that many a farmer will return home determined to join the local cow-testing association and to weed from his herd those animals which a little bookkeeping proves are not paying for their board.

The building given over to the Iowa State College of Agriculture is always visited by many thousands of interested visitors and always makes a display well repaying the visit. This year was no exception. The exhibits were arranged so as to form eleven lessons in farming, a regular college course, arranged as follows: First—"Keep clean and you will keep healthy;" an exhibit showing the value of covering garbage cans, removing manure from houseyards and screening the farm home. Second—"Make your farm a home and your boy will stay;" showing a model farmstead arrangement. Third—"Keep your soil sweet and your crops will smile;" a display showing how to test soils for acidity and how to treat them. Fourth—"Sow good seed, for you reap what you sow;" showing the value of seed corn selection and the like. Fifth—"Electrify, for it is safe and convenient;" a display of electrical conveniences for the farm home, barn and outbuildings. Sixth—"Use your head, it will bring results;" a display of the educational work done at Ames. Seventh—"An ounce of prevention is worth a pound of cure;" showing how to prevent disease epidemics or to check them once they break out. Eighth—"Use good sires, for the sire is half the herd;" a lesson in animal husbandry, by means of photographs and figures. Ninth—"Discard the drones or they will discard you;" an object lesson in the laying power of various hens. Tenth—"Economize time by economizing labor;" a boost for the self-feeding or cafeteria system of caring for hogs. Eleventh—"Let your light shine for the good of others;" a demonstration of the work done by the college of journalism at Ames. The state college exhibit was unusually well arranged and attractive.

Ranking second in the United States in value of beef cattle and third in the value of dairy cattle, it is hardly to be wondered at that the Iowa State Fair brings together such a remarkable cattle display as is to be found at no other state fair. Over 1,300 head were at the fair grounds in Des Moines this week, as fine a display as was ever gathered together at one place. This being the case, it is regrettable in the extreme that better accommodations are not provided. It is only fair that the cattle breeders of Iowa should have quarters more in keeping with the size, the value and the attractiveness of their exhibits. Therefore, the demand for a new brick cattle barn, with a capacity of 1,200 head, to cost in the neighborhood of $35,000, should be complied with by the next legislature. Such splendid cattle as were brought to Des Moines this week should no longer be housed in the old, unsanitary, unsightly and insufficient frame buildings which long ago outlived their usefulness. The cattle exhibits at Des Moines this week filled twenty-two barns, with two tents necessary for the overflow. Of these twenty-two barns three are of brick, the remainder being old frame buildings, insufficiently ventilated and extremely uncomfortable in hot weather. The old frame sheep barns, discarded for the sheep when the fine new barn was built, have been turned over to the cattlemen, who have been obliged to put up with whatever accommodations might be vouchsafed to them. It is high time that more attention should be paid to the needs and the demands of the cattle exhibitors, whose display was second in interest to nothing shown at Des Moines this week. A petition for a new cattle barn will be presented to the legislature next winter. It should certainly be granted.

With the automobile registration in Iowa already past the 190,000 mark and with Iowa farmers spending well on toward $50,000 a day for new cars, it is not to be wondered at that thousands upon thousands of automobiles, the bulk of them belonging to farmers and visitors from small towns, were in evidence at the fair every day or that the automobile exhibit, on the first floor of the amphitheater, should have attracted much interest. The early days of the fair found every road leading into Des Moines literally crowded with automobile tourists, many of them bringing their camping outfits strapped on behind the car, with tonneau, running boards and front fenders all well encumbered with grips, valises, lunch boxes and miscellaneous baggage. It has come to be quite the fashion to motor to the fair from all parts of the state, but never did so large a percentage of the visitors come in their own cars as this year. Ample parking accommodations were provided in the grounds and it was a liberal education in automobile popularity and possibilities to pass the thousands upon thousands of cars which lined every roadway of the fair and filled the huge parking space. A drive to Des Moines over the good roads which Iowa already boasts, with a home-cooked lunch enjoyed in the car and perhaps a few days of camp life in the camp outfit strapped on behind the car, these things added to the attractiveness and enjoyment of the fair to thousands of farmer visitors. They likewise enjoyed looking over the automobile displays, the 1917 models of a half hundred makes being exhibited, with innumerable accessory displays in addition. The automobile has come to the Iowa farm to stay; it is a necessity, no longer to be classed as a mere luxury. This was proved again, most conclusively, at the state fair this year.

The horn of plenty, or river of corn, which was the central and dominating figure of the Iowa exhibit at the Panama-Pacific Exposition at San Francisco last year, occupied the place of honor in Agricultural Hall and called the attention of every visitor to Iowa's supremacy in corn. The huge mass of corn (5,000 ears in all) was poured from a cornucopia, suspended high in the rafters of the great building, in luxuriant profusion at the feet of the visitors, an immense pile of Iowa's famous product, forty-five feet in height and sixty-five feet wide at the center, with the word "Iowa" spelled in letters of red corn across the middle. No more striking or beautiful exhibit was ever shown at the Iowa fair and the artistic manner in which the corn was arranged brought forth many congratulations from visitors. Corn is supreme in Iowa and Iowa is supreme in corn, to which the horn of plenty testified in wonderfully convincing manner. It is planned to let the horn of plenty remain in its commanding position for two years and perhaps be made a permanent feature of the building in which Iowa's field crops are displayed and exploited.

Silo Town, as the large tract given over to these structures has come to be called, was crowded with visitors throughout the entire week, for never was interest in the silo so high as today. Several acres are devoted to this exhibit. More than twenty different styles (brick, concrete, stave, tile, metal, and so on) were displayed, some of them in sections, but most of them in their completed form, just as they are found on thousands of Iowa farms today. Alongside the silos were silage-cutting and silo-filling machinery and all manner of time-saving and labor-saving devices for the farmer who has come to learn the value of the silo. According to the figures gathered from the county auditors' reports for 1915, there are 13,251 silos now upon the farms of Iowa. The editor of Greater Iowa, the official organ of the fair, aptly comments: "A goodly number and if grouped would make a respectable city, but spread over ninety-nine counties and scattered among nearly 200,000 farms, it is not such a magnificent showing after all, only about one silo to every fifteen farms. The lessons of the last year or two have set stock growers thinking, and silo building is sure to enjoy a boom in the future." It is safe to say that the splendid silo exhibit at Des Moines this week will add to the large number already erected and quicken interest generally in this important farm structure.

This year"s poultry exhibit was unusually large and worthy, and demonstrated conclusively that more and more attention is being paid to Biddy in Iowa year by year. The poultry building is always visited by thousands, particularly by the farm women, to whom this important branch of the economics of the farm has been assigned in the majority of cases. Because of the growing interest in poultry and the larger exhibits, year by year, the time has come, the poultry enthusiasts feel, when they are entitled to more consideration and better accommodations. Accordingly, petitions were circulated this week, asking for a new poultry building, located in a more accessible part of the grounds. The petitions received many signers. It is a fact that the poultry building today is not visited by as many as it would be if it were more accessible and that larger and better quarters are needed. Whether they will eventuate before another fair is problematical, but the campaign started this week will not end until the determined poultry people have won what they are asking for, that is certain.

Some eight or ten of the large tractor manufacturers displayed their various models, supplementing the interest aroused in the "iron horse of the farm" by the Cedar Rapids tractor show a fortnight ago. A farm was leased and plowing demonstrations were given daily, being witnessed by hundreds of farmers unable to attend the Cedar Rapids show or wanting further particulars and details. The fact is, the interest in tractors was never so great as it is today and every time a tractor is exhibited, either in action or at rest, it is sure to be looked over carefully by as many farmers as can crowd around it. Useful in almost every branch of farming in which power is needed, the tractor is coming into its own in Iowa today, as in other grain-belt states. The display at Des Moines this week was interesting in the extreme and adds to the general interest manifest in this wonderful new factor in increased farm production and farm profit.

More than sixty acres given over to the display of farm machinery testify to the extent to which time-saving and labor-saving devices are coming to the aid of the farmer and every class of worker in Iowa. Machinery Hall, a colossal structure of brick and steel, covering three and one-half acres, was crowded to its fullest capacity, while in some sixty acres adjoining was to be found an overflow of engines, farm machinery, ditching machines, shredders, huskers, threshers, graders and a thousand and one other machines and appliances to increase efficiency and to reduce the time necessary to perform the work of the world. No state fair makes such a pretentious and marvelous display of machinery as the Iowa fair, for in no other state are the farmers and the citizens generally such good customers for the latest improved devices and appliances.

The days of rank overcharges, of obscene shows on the Midway and of discourtesy on the part of minor officials seems over at the Iowa State Fair, for which relief much thanks. No instances of overcharge were reported throughout the entire week, Des Moines restaurants and hotels maintaining their regular price scales and treating their state fair guests with the utmost consideration. The Midway shows were free from all former objectionable features, and, while none of them were really meritorious enough to warrant attendance, fair crowds have come to think that such "amusement" is a necessary part of the week's festivities and so separate themselves from the necessary money with wonderful good nature. No Midway adds a particle to the worth of any state fair, but so long as they are free from smut and objectionable physical displays, they can be tolerated, even if not enjoyed.

BREEDING CATTLE.

SHORTHORNS.

It has become a slogan "If you are looking for Shorthorns, go to Iowa." As an agricultural state Iowa is a winner. Shorthorns must be good farmers' cattle if the show of Shorthorns brought out at Des Moines this year is any proof of the pudding. Over 350 of the good old cosmopolitan breed reported at the fair grounds and practically all of them were led into the ring to be judged by Mr. A. J. Ryden, of Abingdon, Ill. He realized his work was cut out for him, but his experience as a breeder and judge did not fail him and his decisions were extremely popular in the face of the large numbers and the strong competition which confronted him in many classes. The first real good class brought before him was the two-year-old bulls which revealed among its numbers a rich, dark roan bull, Choice Cumberland, shown by Miller & Sons, of Missouri. The bull has an abundance of Shorthorn character, is level, smooth, deep, wide and mellow and by many was thought to be a fit candidate for grand championship honors of the show. He had no great difficulty in capturing senior championship honors, but was confronted by Bellows Bros.' senior yearling bull, Village Supreme, the junior champion bull that carried off the premier bull honors of the show. In the senior yearling class this young bull was an outstander. He carries an abundance of substance and thickness and looks like a wise selection for the Missouri herd. The futurity classes were sensational. Fifty-one senior bull calves and twenty-four junior bull calves were led into the ring and the showing bore testimony to the value of the futurity stake and the wisdom of the men who founded it. Naturally, in such a large number, quite a few tail-enders could be found, but they were vastly in minority. The futurities are valuable in developing and bringing out many young bulls that might never be heard from were it not for the encouragement given the breeders and the interest aroused by the showing. The cows and heifers presented strong classes all the way through. In the aged cow class Carpenter & Carpenter presented Maxwalton Queen, a stylish, deep roan cow which carried off first prize. The two-year-old female class was exceptionally strong. Lady Violet 7th, a deep, wide, nicely-styled white heifer that might be a trifle smoother, led the ring. In competition with Maxwalton Queen she was given the senior purple ribbon. The junior yearling heifer class brought out twenty-seven good heifers. Three beautiful roans stood at the top and in this class competition was extremely strong between Lenora Goods, shown by Howell Rees & Sons, and Village Clara 6th, from Uppermill Farm. Village Clara 6th is a good type, strong in the loin, but fell below the Rees heifer that was placed first. Lenora Goods was later made grand champion female of the show, all three female purples going to Howell Rees & Sons. The futurity classes brought out an exceptionally strong class of senior heifer calves, forty-five in number. This class was as a whole decidedly better than the senior bull calf class. It was exceptionally uniform and included no culls. Charlie Saunders, who this year is taking a rest from show-yard activities, but who was as much interested in the showing as ever, said he believed it was the best class of senior heifer calves he ever saw. The showing at Iowa was strong testimony to the general popularity of this great breed of cattle.

HEREFORDS.

One hundred and twenty-six white faces led before Judge Phil C. Lee, of San Angelo, Texas, constituted the showing made by this popular breed at Iowa. Iowa has had larger Hereford shows and perhaps better. However, the showing was uniformly extra good, only a few of the exhibits being out of form. A few individuals could have been dropped out without hurting the show. In all classes the top ones were excellent, but more sensational shows of Herefords have been staged in Des Moines. Many of the classes were closely contested and Mr. Lee was kept working. Safety first seemed to be his slogan and no decision was made without due consideration. In the two-year-old bull class Mr. Lee favored the smoothly turned bull, Bocaldo 6th, shown by Hazlett, and later this individual had no difficulty in climbing to premier bull honors. The junior purple went to Harris on Gay Lad 40th, an excellent junior yearling bull. The aged cow class revealed Vernet Queen 8th, from La Vernet Stock Farm. She had no great difficulty in taking two purples among the females, winning the final honors over the senior yearling, Belle Blanchard, shown by Engle & Sons. Senior and junior yearling heifers and senior heifer calves made strong classes which took considerable of Mr. Lee's time before decisions were made.

ANGUS.

Iowa is the premier doddie state and everyone expects to see a good show of Angus cattle at Des Moines. Practically everyone was surprised, however, at the showing made this year. It was thought that there could be no approach to the pinnacle of success in fitting that was made on the Angus cattle last year, but the showing made this year was superior and certainly a credit to the Angus breed and to the men who exhibited at Des Moines. Judge John E. Robbins, of Horace, Ind., had no easy task. Such character, fitness, uniformity of classes and absence of poor ones are seldom seen at any show. Competition started keen at the crack of the gun and from the time the first class was filed to the drawing of the curtain Mr. Robbins' work was well cut out for him. Five good bulls appeared in the aged bull class and ringsiders at once scented a contest for the blue ribbon between the Caldwell bull, Blackcap Star, Escher & Ryan's bull, Ben Hur, and the Congdon & Battles' bull, Barbarian of Rosemere. The Caldwell bull appeared in a somewhat better condition, but the Escher & Ryan bull shows great depth and a remarkable bull. In the two-year-old class Caldwell's Black Cap Bertram, another smooth, stylish bull, succeeded in winning first over the deep, level Knight of Rosemere shown by Congdon & Battles. Black Cap Bertram was later made senior champion. The junior yearling bull class revealed Epistos from the Caldwell herd. Here is a sensational young bull, low down, thick, sappy, growthy, full of Angus character. Caldwells think he is as good a bull if not the best they ever owned. He succeeded in defeating his stable mate for grand championship honors. If bulls were strong, cows were even stronger. The aged cow class was sensational. Mr. W. A. McHenry, the veteran Angus breeder, was present at the ringside, for the first time in many years taking a passive interest in the showing. He considered the class of cows the equal of any he had ever seen at the International, while Mr. Robbins thought it was one of the best rings of beef cows he had ever seen in a show ring. Mr. Robbins picked the Caldwell entry, Pride Petite, a wonderfully smooth-topped cow, thick and straight on the back, and with all her covering mellow, neat and graceful. Next to her in class stood Congdon & Battles' Quissy of Meadow Brook, an exceptionally deep, thick cow. Eulinia 28th from the Escher & Ryan herd stood in third place.

GALLOWAY.

Two exhibitors from Kansas and one from Missouri led the entire exhibit of thirty-seven head of Galloways before Prof. W. H. Pew, of Ames, Iowa, who did the judging. Some really good animals appeared, but some others might have showed in better shape. The tops and champion were up to standard.

POLLED DURHAMS.

Eight exhibitors led the fifty-seven head of Polled Durhams before Prof. W. H. Pew, of Ames, Iowa, for judgment. The showing was representative and indicated plainly an average improvement over some past shows. The aged bull class once more brought out Stegelin's True Sultan, which had no difficulty in winning the blue in class, and senior and grand champion honors. Hultine's junior yearling bull, Roselawn Marshal, was made junior champion. Two good cows stood at the top of the aged cow class with Achenbach's Sultana showing an advantage. She had no great difficulty in winning senior and grand champion honors. Stegelin's senior heifer calf, Queen's Sultana, was awarded the junior female purple. Stegelin was especially strong in groups, winning all the blues. True Sultan and his blood won strongly at Des Moines.

RED POLLED.

Red Polled cattle came into their own at Des Moines this year. Nowhere else in the cattle department was there greater evidence of marked improvement over some shows made by a breed in recent years. The showing demonstrated what a few short years of good selecting, breeding and feeding can do. There have been Red Polled shows as large at Iowa, but no Red Polled judge ever worked over a closer bunch of Red Polled females than did Mr. Elliott Davis, of Lincoln, Nebraska, who made it evident that his type of a Red Polled cow was not a special-purpose cow. The value of a sire in improving cattle was well known in the show by the preponderance of the blood of Teddy's Best. Two-thirds of the blue ribbon winners were descendants or near relations of this bull.

In the aged bull class Teddy's Best was placed second, his son, Teddy's Charmer, carrying off the blue. Another son of the veteran was third and a grandson stood fourth. Even though Teddy's Best has seen almost ten complete years, there was considerable ringside comment as to the wisdom of placing him below his four-year-old son, who naturally shows somewhat more bloom than his sire, but leans very strongly to beef. Teddy's Charmer was picked for senior and grand champion honors.

The aged cow class brought out ten good cows and a contest was cow, J. D. Brunhilde, a really remarkable cow with good depth of body, an abundance of quality and the finest udder in the class. Too much indication of dairy tendencies lost favor for her in the eyes of the judge, who gave the blue to Constant, an extra good top-lined on for the top places. Quite a following favored the Jean Duluth cow carrying more meat and showing smoother covering even at her ten years of age.

The two-year-old heifer class brought out another strong class of ten head. Caroline, a smooth, deep-bodied heifer, was placed first. In second place stood an excellent heifer, J. D. Purity, smooth on the back but not so deep as the Hill heifer, Caroline. The heifer—J. D. Purity—has in four months produced 200 pounds of fat—something of a record for a two year old, but leaned a little too strongly to dairy for the type desired by Mr. Davis. Caroline later carried off senior and grand champion ribbons.

The younger female classes were uniform and typical; and all of the blue ribbon bearers were granddaughters of Teddy's Best. In fact the entire Red Polled show looked like a tribute to the value of a good sire.

DAIRY CATTLE.

HOLSTEIN.

The Holsteins at the Iowa State Fair this year were represented by approximately 150 head, practically all of which had quality and type to an unusual degree. There were very few mediocre animals shown and competition was very close in all classes. Dr. O. P. Thompson, of Waterloo, Iowa, who judged this breed, and several prominent breeders agreed that the Holsteins this year surpassed any previous showing made in Iowa. The herd groups especially made a good showing and gave evidence of the careful work Holstein breeders are doing. Every animal in the herds shown was a good one, instead of an outstanding individual shown with several average animals, as is sometimes the case. In the group exhibits competition was close between the Galloway-Messer Farms, the Iowana Farms, and R. E. Haeger. The Galloway-Messer Farms carried away the prizes for grand champion bull and grand champion cow on Hengerveld King and Jewel Walker Gerben, of Cedarside. As Prof. Thompson states it, "the strongest point of both these individuals is that they had no weak points." While some animals may be superior on some particular points, there are seldom found individuals which are equally strong in all points. The junior champion bull was Roberts Abbekirk Pontiac, owned by Dr. David Roberts. He was an excellent type of Holstein, possessing plenty of size and bone yet not lacking in quality. The champion heifer, Iowana Pauline, owned by the Iowana Farms, Davenport, Iowa, showed good dairy type with good size and constitution, that is characteristic of the breed. Holsteins are getting stronger every year in Iowa and the progress made during the last year has been rapid indeed, if we may judge by the improvement in this over last year's showing.

JERSEYS.

Four exhibitors furnished the entire showing of fifty-two Jerseys at Des Moines this week. While the exhibit of these Island cattle was not large, Mr. Forbes in his judging ran across some really excellent animals which would have been able to have given an account of themselves in stronger competition. Stockwell's Champion, H. C. Young's aged bull, was the outstanding bull in the show and easily made his way through the grand champion honors. The aged cow class brought out Manor's Blossom, as good a Jersey cow as has been seen at the Iowa State Fair in recent years. Among the females she was easily in a class by herself and had no difficulty in gaining senior and grand champion female honors. While the show was small, no real poor ones were brought out.

GUERNSEYS.

The showing of Guernseys at the Iowa State Fair this year was pronounced by Prof. H. G. Van Pelt, Waterloo, Iowa, who judged this breed, as the best lot of Guernseys ever shown at this fair. The number of animals competing in practically every class was greater than in past years and the competition closer. Oftentimes a few outstanding individuals are shown in a class and the rest of the animals are only mediocre. Such was decidedly not the case with the Guernsey show this year. There were outstanding individuals, but they were backed by many strong animals who took the ribbons for second, third and fourth places. Hayes' Cherub II, owned by W. W. Marsh, Waterloo, Iowa, took the prize for grand champion bull. He is a clean-cut, alert animal that has carried away many trophies before and now heads a herd of Guernseys of which Mr. Marsh has every reason to be proud. The grand champion cow, Hayes' Wena IV, is also owned by the Waterloo breeder, who, in addition, carried away the blue ribbons for graded herd, breeder's calf herd, get of sire and produce of dam. In these classes the other exhibitors furnished close competition, which made the interest in them very keen. Flora's Memento, owned by W. W. Marsh, was junior champion bull and Grees' May Rose, owned by Jean Duluth Farm, Duluth, Minn., was champion heifer. Both these animals showed good size and quality and excellent Guernsey type. Those who were competent to compare the Guernsey show this year with that of last year stated that it was superior in every respect —the interest was keener, the animals showed more size and quality, and classes were better filled. This progess over last year is certainly encouraging to lovers of the Channel Island cattle.

AYRSHIRES.

A keener interest was shown in the Ayrshire cattle last week than in any previous year at the Iowa State Fair. The entries were in fine fix, making the entire exhibit a very attractive one. The quality of the Ayrshires has improved much of late and in no year has this improvement been more marked than in the past one. All classes shown were well filled and there were a number of individuals of special merit. Mr. James Watson, Kansas City, Mo., judge of this breed, declared that this section of the country was taking a greater interest in Ayrshires and good herds were being built up. The result of this development was plainly shown in the ring at Des Moines.

BROWN SWISS.

H. W. Ayers, of Honey Creek, Wis., and S. B. Hefty & Son, Renwick, Iowa, furnished the complete showing of Brown Swiss cattle. Ayers won all but two blues and one purple and the diploma as premier exhibitor.

HORSES.

In spite of the 200,000 automobiles owned in Iowa, a large share of which are owned by farmers, horses still hold their own in the Hawkeye state. Anyone who is pessimistic about the future of the horse business would certainly have received an inspiration at Des Moines this fall. The show of horses was well balanced and fully up to standard and in many places it showed above par. In the American-bred classes especially improvement was shown and the group classes in practically all breeds of draft horses showed the uniformity and general excellence that testifies so well to general improvement in live stock.

PERCHERONS.

Judge A. L. Robinson, of Pekin, Ill., who judged the Percheron hosses at Des Moines this year, expressed himself as being extremely well pleased with the appearance of the show. Having judged at Iowa in 1915, he was in a position to compare the two shows and considered this year's show superior, as far as general average is concerned, to last year's record. Mr. Robinson did the awarding in his usual efficient manner and gave general satisfaction. The aged stallion class brought out thirteen good horses, quite easily topped by Singmaster's Lagos, a powerful, well-balanced, good-moving, nicely-finished stallion which was grand champion at San Francisco in 1915. He had no great difficulty in getting the championship favors at Iowa. Second to him in class was Lycee, a stylish, nice qualitied horse from the Dunham farms, Wayne, Ill., which was later made reserve champion. The three-year-old stallion class was especially good and much favorable ringside comment was given concerning the general quality of the ring of stallions shown. Fairhope, a toppy, good boned, good moving, brown horse shown by Singmaster, was placed over Keota Jalap, a gray showing extra good quality, deep body and good movement, but not quite so toppy and strong as Fairhope. Fairhope was made reserve champion stallion owned in Iowa. In the mare classes the large, roomy, clean gray mare, Pink Brillante, shown by Dunhams, was placed first and was later made champion mare of the show. She might have been shown in better condition, but she possessed so many sterling Percheron qualities that she could not be overlooked by the judge. Turquoise, the 1915 futurity winner, was placed first in the two-year-old class and was made reserve champion this year. Last year she was the champion mare of the show. The futurity classes this year made a strong showing, twenty-two being shown. Fewer culls were brought forward. Laynot, a rugged, heavy-boned, nicely limbed and footed horse, owned by Singmaster, was made futurity winner in the stallions. Twenty-three fillies comprised the female futurity showing and made a somewhat better display than did the stallions. Patience, shown by Stafford & Son, won the futurity and was the champion mare owned in Iowa.

BELGIANS.

Mr. Alex Galbraith, of De Kalb, Ill., judge of the Belgians at the Iowa State Fair for this year, declared the showing of this breed to be the best he had ever judged. "The prize winners could have been picked out," said Mr. Galbraith, "and the class would still have been good." While other shows may often have a larger number of entries, it is doubtful whether one would find such uniformly good classes as were shown at the state fair this year. The young stuff was especially good, the futurity classes being very large and competition in them very keen. The first prize winner of the stallion futurity class was Joubt de Roosbeke, a fourteen-months-old stallion of good size and excellent conformation, owned by Champlin Bros., Clinton, Iowa. First and second prizes in the futurity class of fillies went to Charles Irvine, of Ankeny, Iowa. Mr. Irvine also won the stallion championship with his aged stallion, Alfred de Bree Eyck and the trophy for champion mare went to Wm. Crownover, Hudson, Iowa. Both these animals were outstanding individuals, but in each case the reserve champion was a splendid animal and furnished close competition. The Belgian interests in Iowa are expanding rapidly and the entries in the ring this year show that breeders are looking toward the highest type and quality obtainable in this breed.

CLYDESDALES.

The Clydesdale showing was up to the average at Des Moines in numbers and easily up to the average as far as quality was concerned. Real culls were conspicuous by their absence and the show brought out some really good American-bred stuff. Hope's Pride, Soderberg's three-year-old stallion, a clean-cut, stylish, good-typed Clydesdale horse, won championship honors. In the futurity class for stallion only six colts were brought out. Prince Fickland, shown by Ford, was futurity winner and was later made reserve champion of the show. The mare showing was quite strong and showed at least two exceptionally good females. Lady May, Barron Bros.' three-year-old mare, was easily first in class and was made champion of the show. She is large, stylish, well furnished with good feet and well-turned pastern, straight and strong in the hocks—in fact, she is what one ought to look for in a good Clydesdale. Andrew McFarlane, the veteran Clydesdale breeder and judge, who awarded prizes to the Clydesdales, thinks she is as good a three-year-old Clydesdale mare as he has ever seen. In spite of all her good qualities, a contest arose when she and Sweet Marie, the first prize two-year-old mare owned by Jones, were brought together to contest for championship honors. Sweet Marie lacks something in substance as compared with the older mare, but is a Clydesdale in every sense of the word and promises to give an account of herself in another year if she can be kept going. The female futurity class was a better ring than the stallion class. Ford's Princess Alice, a half sister to the futurity stallion winner, won first without any great contest and was made reserve Iowa champion. Princess May, Ford's four-year-old mare, was made champion of Iowa.

SWINE.

POLAND CHINAS.

Poland Chinas advertise Iowa. The great love which the Hawkeye state has for this breed was admirably shown by the way the crowds swarmed around the show ring and hovered near the pens at all times of the day. And well they may be proud, for the Poland China show at the Iowa State Fair this year was one of the best exhibits of its kind on record. Every one of the 636 entries deserved a prize, and the champions won only after a hard fight. The fine quality, so highly commended in the young stuff of last year, was more noticeable than ever in this season's yearlings. The judge, Mr. Thos. A. Shattuck, of Hastings, Neb., worked long and hard in attempting to do justice by the fifty-one exhibitors, and the final decisions seemed to express the sentiment also of other authorities. The aged boar class, with its twelve entries, was a stickler. The winner, and later grand champion of the breed, was an exceptionally well-proportioned hog with strong back and legs. In quality and smoothness he was closely pushed by the senior yearling boar, his closest competitor. The young stuff all show good prospects for prize winners in next year's show. So far, sales have been many and prices are ranging high. Many new breeders are entering the Poland China breeding.

DUROC JERSEYS.

Seven hundred and five Duroc Jerseys in the pens made that breed, as usual, the first in numbers of any shown at Des Moines. Although slightly less than last year's showing, nevertheless what they lacked in numbers was made up in quality, and the show compared favorably with that of former years. Most of the old exhibitors were back and many new faces were seen in the ring. The addition this year of extra futurity classes for spring boars, sows and litters, and the consequent addition of $500 more prize money made competition more keen and the winning of a prize even more worth while than in former years. These new classes are under the joint management of the Iowa State Fair and the National Duroc Jersey Record Association and promise to be a long step toward the advancement of the breed. The classes of aged stuff were all large, none having less than ten entries, and in most cases many more. Forty-five entered the ring in the junior boar pig class, all in the pink of condition bearing the characteristic form and style of the breed. The sow pig class was not quite as large, but in other respects they were up to the standard of the boars. Selling this year, as with the Poland Chinas, is extremely good, and much high-priced stuff is changing hands at fancy prices. The weather has been admirably suited to hog shipping and showing, and general satisfaction is being expressed on all sides at the results of another year's fair.

CHESTER WHITES.

Complete satisfaction reigned in the Chester White show ring at Des Moines this year, an unusual condition in any show circle. Excluding a few who were disappointed that their animals did not take higher ribbons, exhibitors and ringsiders alike expressed themselves as well pleased with the placings. The number of hogs shown and the size of the classes was slightly less than last year, but what was lacking in numbers was more than made up in quality. As a result of the previous season's demand for quality, the exhibit was marked by exceptional smoothness and finish as well as scale and bone. The judge, Mr. L. C. Reese, of Prescott, Iowa, followed up this demand in much the same manner. Four hundred eighty-five of the "whites" competed for the $618 prize money offered in the open classes. In addition to this $10.0 was offered for the first time this year by the Iowa Chester White Breeders' Association for the encouragement of boys and girls under sixteen years of age in the raising of pure-bred stock. The grand champion boar, William A., owned by W. T. Barr, of Ames, Iowa, was an animal of exceptional merit. A weight of 950 pounds, with marked activity and rare strength of legs, together with a good quality of bone and flesh, were the points which won for him the honors. William A. was champion of his class last year at Iowa and grand champion at Minnesota. The largest class shown was that of junior boar pigs, but was closely pushed by the junior yearling sows. The aged sows can also be commended on the exceptional showing which they made.

HAMPSHIRES.

The demand for an active, rapid growing hog was quick to be noted in the Hampshire show ring this year by the progress which has been made in the development of this breed. Very keen competition was exhibited from the first class that entered the ring to the choosing of the grand champion. The judge, Mr. Wilson Rowe, of Davenport, Iowa, acknowledged to be the best of authority on the breed, found it no easy task to place the blue ribbons. Three hundred thirty-eight entries were made by sixteen exhibitors, only two of whom were from without the state. Additional prizes in the form of cups and prize money offered by the Hampshire Record Association and Iowa and American Breeders' Association, encouraged the developments of the breed and made the winning of a prize even more worth while. As in former years the largest classes were in the young stuff, thus giving promise for a larger and better show next season.

BERKSHIRES.

The Berkshire show at Des Moines opened with sixty-four pigs in the pens by actual count. Although not as many as in some previous years, a marked improvement could be noticed in quality and size for age. The six entries in the junior boar pig class gave the judge a man's work in placing the ribbons. They were all exceptionally long bodied and growthy. The senior boar pig and sow pig classes were but slightly inferior to the boars. The junior and senior champion boars were models of Berkshire type, the former losing to the latter in the grand championship honor mainly on a little coarseness of shoulder. Berkshire men are well pleased with the progress which their breed is making in the Hawkeye state.

YORKSHIRES.

Yorkshires are gaining strength in Iowa. Although by no means as popular as the lard hogs, yet the showing at the state fair this year indicates they are on the up-grade. Six exhibitors, all from within the state, showed 115 whites in the ring Wednesday. The strongest classes among the boars were the senior yearlings and junior pigs. The former were exceptionally long, deep bodied and growthy. Ten entered the junior yearling sow class, which was in itself a battle royal for the blue ribbons. Many new buyers are investigating Yorkshires at fancy prices, which looks well for the popularity of the breed.

TAMWORTHS.

Only ten entries were made in the Tamworth classes, passed on by Judge C. C. Roup, of Kalona, Iowa. Of these, Propst Bros., Iowa City, Iowa, took senior and grand championship on sow, junior champion sow, junior champion boar; also blue ribbons in junior and senior sow pig, young herd owned by exhibitor and young herd owned and bred by exhibitor classes. J. B. Mackoy, Farragut, Iowa, took senior and grand championship on boars.

THE IOWA STATE FAIR.

Wallaces' Farmer.

The Iowa State Fair was a most satisfying exposition of Iowa's agricultural resources and wealth. As noted in our preliminary report last week, it was by all odds the best all-around fair that has yet been held. Ideal fair weather until Thursday made a record-breaking attendance. Tuesday was the big day, when there were about 60,000 people on the grounds. By actual count at the gates, the number of automobiles on this day exceeded 5,000. They came from every county in the state, and a very large percentage of them carried farm folks. Rain came Thursday, not a heavy rain, but enough to cut down the attendance by many thousands. Folks who had driven in did not care to battle with mud going home, and the cloudy skies Wednesday evening and Thursday morning started them homeward. The net profits this year may not entirely wipe out the $42,000 deficit, of last year, but they will make a big hole in it.

A creditable tractor demonstration was the center of interest to a great many farmers who could not attend the Cedar Rapids demonstration the preceding week. Several tractor manufacturers did not care to miss an opportunity of demonstrating their products at the fair, where thousands of farmers come every year to learn about new and improved types of machinery. Practical work in plowing on land outside of the fair grounds impressed farmers with the fact that tractors are going to provide a large amount of farm power in the future. The machines did all that could be expected of them. The chief questions of doubt in regard to them were whether they would be sufficiently durable to justify the expense, and if they could be operated by ordinary farm labor. Manufacturers feel confident that they have a type of tractor now that answers both questions satisfactorily, and that the owner of a quarter section or larger farm will have no occasion to regret the investment in a tractor.

Many of the 1917 models were to be seen at the automobile show, and in order to take care of the increased number of cars shown, two rows had to be added to the usual space at the amphitheater. About eighty cars were on display, and as many farmers as city folk visited the exhibit. Those in charge said large numbers of sales were being made to farmers, and for this reason automobile manufacturers and dealers are taking advantage of state fair time to display their products. An effort will be made to get an appropriation for a building which can be used exclusively for the automobile show. The show evidently has outgrown its present quarters. While the present show is made largely by Des Moines dealers, it is believed that if there was room, outside manufacturers would come in larger numbers.

Iowa's school exhibit was fully up to standard. It is evident from observing the displays arranged by many of the schools, that manual training and domestic science are occupying more important places in the rural school courses than they did a few years ago. Iowa now has a system of standard schools, this being planned in 1914, when only 490 schools came up to the standard. The next year 564 had met standard specifications, and in 1916 the total has reached 604. Two hundred and forty-six are still below standard, with an enrollment of 35,000 pupils, as compared with 190,000 in the approved schools. To be approved as standard, a school must meet the requirements in material equipment, in organization of the school, in the course of study, in the qualifications of the teacher, and it must have an effective school spirit. Within the next few years, it is hoped by those interested in the improvement of Iowa's school system that all will come up to the approved standard.

Practical use of the wireless telegraph was made by a number of Iowa newspapers. Correspondents wrote their copy on the fair grounds and delivered it to the operator in charge of the wireless station, at the College Building. From here it was flashed into space and picked up by operators at other stations which arranged for the service. The public was given a good opportunity to see both the method of sending and of receiving messages by means of wireless telegraph, which is coming into extensive use, and which probably in time will do away with all wires and poles now in use.

The fruit show was about the largest that state fair crowds have had an opportunity of seeing. The color was not quite as good as usual, on account of the dry weather, but the quality was above the average. Much of the fruit was not ripe. Each year more attention is given to boxed apple exhibits, which indicates that growers of choice fruit are beginning to take advantage of this package for marketing. Demonstrations in grading apples according to size and quality, as well as packing the assorted sizes in boxes, were watched with keen interest. One of the features of the fruit show were two boxes of apples of the 1914 and 1915 crops, which had been held in cold storage by C. E. Mincer, of Hamburg. Both boxes were in fair condition, sound, and they retained their flavor. Fruit growers are very optimistic over the possibilities of raising more apples and other fruit in Iowa.

The weather was ideal for the hundreds of campers, who made a fair-sized city east and west of the demonstration grounds. A great many drove to Des Moines from far corners of the state, and brought their camping outfits along. No charge is made for camping privileges, but the fair management goes to considerable trouble and expense to provide conveniences for those who prefer to spend their entire time on the grounds. Campers had access to well-organized grocery stores, moved to the fair grounds for the occasion, and for nearly two weeks the proprietors did a thriving business in supplying the needs of the tented city. Many who came in automobiles brought along their camping equipment in two-wheeled trucks attached to the rear of their cars. These attachments are being found very useful for carrying light loads to and from the farm, or in carting baggage on a longer tour, such as to the state fair.

Practically every type of country road and city street could be inspected at the headquarters of the Iowa State Highway Association. There was a plain dirt road, an oiled dirt road, a gravel and an oiled gravel road, asphaltic macadam, one and two-course concrete, fiber brick, asphaltic concrete, sheep asphalt pavement, creosote wood blocks, and brick. Photos on the walls illustrated the methods of road building, grading, oiling, construction of culverts, and other phases of work looked after by the highway commission. The disastrous effects of bridges which had been found wanting when they had to support a heavy load, also could be seen. The exhibit was of particular educational value to those responsible for road building, and to every farmer and taxpayer of the state. Members of the commission took turns in explaining the display on different days of the fair, and the tent had its share of attendance daily.

An educational plea for the more extensive use of Iowa coal was made at the headquarters of the mine and mining department. The usual guessing contest, in which all were invited to estimate the weight of a pyramid of coal in front of the building, was repeated. Statistics displayed showed that coal is mined in twenty-three Iowa counties, and that the industry gives employment to 17,000 men yearly. Approximately 8,000,000 tons of coal are mined in Iowa each year, and its total value amounts to $25,000,000. Tests made by the Agricultural College indicate that Iowa coal is superior to much eastern coal, for which considerably higher prices are charged, the retail cost of the former being about $4 a ton, as compared with $5.50 to $7.25 for the latter.

In the same building with the mining products was a display arranged by the Geological Society. This was of interest to a great many, especially the exhibit which showed the different steps that clay and lime go through in the manufacture of Portland cement. First there was the rough limestone, then the clay, and the ground mixture of the two materials. When the mixture is burned to fusion in kilns, clinkers are formed, and to these gypsum is added and ground up. The gypsum helps to govern the setting properties of cement. The next process with the ground mixture of clay, limestone and gypsum brings about the finished product of good Portland cement, of which thousands of barrels are used in Iowa yearly. Brick and tile were included in the society's display.

One of the new implements to be found in the machinery exhibits was a road scarifier. The Iowa Highway Commission had this at their headquarters. Several of these scarifiers have been in use on gravel roads this summer, and the commission is very enthusiastic in regard to its qualities. A gravel road, after it has become hard and packed, often gets wavy and uneven. The scarifier, which is attached to a road grader, simply scars the gravel, after which it is leveled with a grader. One of these scarifiers was used on gravel roads at Eagle Grove recently, two engineers of the commission being present to look into its merits. It took lots of power to rip up the packed gravel, but after it had been leveled, a smooth-surfaced road, free from bumps, was the result. With the more extensive building of gravel roads, it is probable that these scarifiers will fill a prominent place in the maintenance of roads of this type.

Twenty thousand fish, which were mostly croppies; several hundred pheasants; a display of fancy colored birds and swans, constituted the exhibit made by E. C. Hinshaw, Iowa's fish and game warden. The department this year has done a great deal of rescue work by seining fish from lakes and ponds which threatened to go dry, and by placing them in rivers. In this way, between 75 and 100 cars will have been rescued, deputies frequently getting 20,000 fish a day from shallow water. About 5,000 ring-neck pheasants have been distributed in different game preserves scattered over the state this summer. The hatch from those put out a year ago is very satisfactory, according to the deputy game wardens.

AT THE COLLEGE BUILDING.

Each year, the State Agricultural College, at Ames, prepares an educational exhibit for the state fair, and thousands find it interesting to climb the hill to visit the building turned over to the college for this purpose. The college display this year was different than usual, and far better, although there might not have been quite so much of it. In the past, a great many lessons could be carried home if one would stop to copy down some of the data posted throughout the building. Few would take the time to do this, so this year it was arranged so that the information could be distributed in the form of printed cards which fit the pocket. Hundreds of sets of these printed slips were taken away, and it is probable that long after the fair is past, they will be a source of reference and information.

One of the cards emphasized the importance of good health as an essential of good living. The lesson pointed out the necessity of a pure water supply, and the need of taking care of garbage. It urged that more attention be given to diet, and that this include plenty of milk from healthy cows, eggs, fruit, and vegetables.

A valuable lesson in landscaping was given in one of the exhibits, and the arrangement of an ideal home yard was suggested in a model that had required much pains in its preparation. The barn, poultry, hog and other buildings were at a convenient distance from the house, which stood the proper distance from the road. The view from the home was framed by trees, and in the background was a row of evergreens. The open lawn in front contained a few trees in groups near the house, and others on the border for shade. The arrangement of shrubs in groups and masses on the lawn borders was suggestive, and around the whole was a double row of evergreens for a windbreak. If the landscape scene were worked out in a practical way, it would make a mightily attractive farm home.

The soils department featured the use of lime, and the map indicated that a great many types of Iowa soil are very deficient in this material. Ground limestone was recommended as being cheaper and safer than burned lime, it being recommended to apply the lime on the surface, just before seeding, at the rate of from three to five tons to the acre. Soils most apt to be acid seem to be those in the Iowan drift, the southern Iowa loess, and the Mississippi loess. Occasional acid areas are found in the Wisconsin drift and the Mississippi loess. The method of making the litmus test was demonstrated.

Within the last two years the college has made 45,000 ear tests, and has tried out thirteen different methods of testing seed corn. After making this comparison, they recommend the rag-doll method as simple, cheap, efficient and accurate, the cost being about 25 cents a bushel, or 5 cents an acre. If all corn growers adopted this method, it was pointed out that the average of thirty-four bushels an acre on Iowa's ten million acres of corn could be increased by two or three times. Poor stands, caused by planting poor seed, were said to be the chief cause of law yields, when the soil and climate are considered.

Hog raisers were interested in statistics put out by the swine department. Diseases and parasites cost the hog raisers of Iowa about a million dollars annually, and some years, when there is a heavy outbreak of cholera, it has amounted to thirty million dollars. A method of controlling lice and intestinal worms by dips, disinfectants and cleanliness was demonstrated. Dry quarters, shelter and good ventilation were suggested to prevent pneumonia, and the liberal use of anti-hog cholera serum to ward off cholera.

The results of breeding fifteen scrub cows to Holstein, Guernsey and Jersey bulls gave pointers on the importance of having a good sire at the head of the herd. The use of one of the dairy sires resulted in a heifer that produced 71 per cent more milk and 42 per cent more butter than her dam. With one exception all heifers of the scrub and pure-bred cross showed a marked increase over their dams.

Two pens of birds gave an object lesson in keeping farm poultry. One of the pens laid 38 eggs to the hen this year, and 91 eggs last year. The other pen averaged 104 eggs this year and 151 eggs last year. According to the information given out, good layers are indicated by late, quick molting, while poor layers molt early and slowly. The former have full, smooth-textured combs, and the latter shrunken and irregular combs. Good layers of the yellow-legged varieties seem to have faded beaks, legs and toes, while the poor ones have rich yellow markings.

Self-feeding of hogs, and the hogging down of corn again were emphasized this year. When hogging down, the college authorities recommend that the hogs have access to alfalfa, clover, rape, or tankage in a self-feeder. Last year at the college, the hogs which had access to these pastures attained a weight of 225 pounds, and were ready for the high October market. They had access to self-feeders, and were more profitable than those hand fed. Heavy, well-grown shotes required 20 pounds less corn per 100 pounds of gain, and mature, discarded sows also made their gains on less corn.

One of the lessons urged the importance of making more use of newspapers and farm journals in spreading methods of making better homes and more profitable or productive crops and live stock. It was pointed out how a preacher or a lecturer could reach only a few hundred persons at most, while printers' ink would reach hundreds of thousands.

The uses of electricity in lighting farm buildings, and in operating machinery, such as the cream separator, churn and other apparatus on the farm, was a feature of the exhibit. Electricity is being used more and more on farms each year, and the exhibit was of great interest to many who visited the building.

A mechanical writing device illustrated what can be accomplished in a mechanical way by means of combining two motions. The engineering department also exhibited a talking arc. A telephone transmitter from a phonograph was placed so that sound waves from it would pass into the bright arc light circuit. Vibrations from the transmitter caused similar waves in the arc light, where the phonograph record could be plainly heard. In the same way, vibrations of the human voice in another part of the building could be reproduced in this arc.

WITH THE STATE INSTITUTIONS.

Few people appreciate the good work that is being done by Iowa's state institutions. Those who visited their exhibit at the fair went away impressed with the importance of their work, and nothing but praise was heard from the hundreds who jammed the tent provided by the Board of Control. In the past, the state institutions have held their exhibits in the Industrial Building, but on account of so many counter attractions there, they did not get the attention they deserved. This year, two tents, each 60x90 feet, were occupied, one being assigned to the cattle and the other to agricultural and manual training products. Warden Sanders, of Fort Madison; Superintendent Kuser, of Eldora, and Doctor Mogridge, of Glenwood, had general supervision of the exhibit as a whole.

Each of the fourteen state institutions made a most creditable showing, and at the same time they acquainted thousands of fair guests with the nature of their work and the character of home life at the state homes. The list of those with educational exhibits are: Hospital for Inebriates, at Knoxville; Oakdale Sanitorium, at Oakdale; the Girls' Industrial School, at Mitchellville; Reformatory, at Anamosa;

the School for Feeble-minded Children, at Glenwood; Iowa School for the Deaf, at Council Bluffs; Cherokee State Hospital, at Cherokee; Colony for Epileptics, at Woodward; Hospital for the Insane, at Clarinda; Orphans' Home, at Davenport; State Hospital for the Insane, at Mount Pleasant; State Hospital for the Insane, at Independence; State Penitentiary, at Fort Madison, and the Industrial School for Boys, at Eldora.

At the Knoxville institution, a specialty is made of brick and tile manufacture. These products occupied a prominent place in the booth assigned to the institution. C. L. Anderson had the exhibit in charge, and he also showed some fruit, vegetables and grains. The Hospital for Inebriates is for men only, there being about 200 patients, and 500 acres in the farm, which is worked by them. Doctor M. C. Mackin is superintendent.

One hundred and seventy-five tubercular patients are being cared for at the Oakdale Sanatorium. The exhibit, in charge of C. A. Wissler, included photos and models of buildings at the institution, where so much is being done to eradicate the dreaded white plague. Very little of the work on 400 acres operated by the institution is done by patients, as, on account of the peculiar nature of the disease, a rest cure has been found the most effective. Doctor Scarborough, superintendent, is contributing valuable data on the treatment and cure of the affliction.

The Industrial School for Girls had a remarkable exhibit of needlework, cooking and sewing, accomplished by some of the 185 members of the institution. Mrs. L. Grove was in charge, and Mrs. Lucy M. Sickels is the superintendent. There is a farm of 200 acres in connection with the home, and more or less of the work is done by the girls, whose ages vary between nine and eighteen years.

E. A. Cromer and four teachers, representing the Reformatory at Anamosa, were in charge of this exhibit, which included furniture, tools and products of the print-shop. The institution farms about 200 acres of land, work being done mostly by unfortunates who have been assigned there. Warden McClaughry has charge of the institution, his chief aim being to build character and transform his patients into useful citizens.

The institution at Glenwood is in the heart of a great apple district, and Mr. E. C. Cook had fifty-four varieties in the fruit display. Most of the work on the 1,017-acre farm is done by feeble-minded children, about 1,500 being cared for at the present time. The display included vegetables, farm crops, grain, furniture and hand-work of the children. Doctor George Morgridge is superintendent.

Members of the School for the Deaf are being taught trades which will help them overcome their handicap, and a goodly display of their products was arranged by Mrs. E. Bryan. These included all kinds of needlework, canned goods, shoes, printed matter, clothing, furniture, and other articles made by deaf pupils. Doctor Henry Rothert, superintendent, deserves much credit for his efficiency in educating these people.

The institution at Cherokee takes care of 1,100 patients, according to Doctor W. A. Bryan, who has charge of the exhibit. There are 1,000 acres in the farm, which is worked by the less afflicted patients. The system is one of re-education, and the products which are made would do credit to skilled labor. The display included woodwork, baskets, embroidery, sewing, harness, fly-nets, brooms, and miniature farm buildings designed by patients. Doctor George Donohoe is superintendent.

Ray McCauslin brought in a display of farm products being raised at the epileptic colony. Buildings at this institution have been completed, and 400 patients can be handled. None are there at present, the farm work being done by prisoners from Fort Madison. There are 1,156 acres in the farm, which furnished a good showing of grain, potatoes and other field crops. Doctor M. N. Voldeng is the superintendent.

Clarinda also is in the heart of Iowa's fruit district and R. H. Pratt had a good display of orchard products, including a bunch of ripe bananas raised at the institution. Patients there do considerable woodwork, a library table good enough for any home, and attractive refrigerators making up part of the exhibit. Doctor Max E. Witte, superintendent, has 1,350 patients under his charge at the present time, and under direction they do the work on a 1,200-acre farm.

At Davenport is the Soldiers' Orphans' Home, where 500 dependent children are being cared for. Miss Beth Lemon, of the domestic science department, arranged the exhibit, which showed what the children are being taught. The school work takes them through the eighth grade, and some get two years of high school work before leaving the institution. There are 240 acres in the farm, and a considerable part of the work is done by members of the home. Eighteen teachers look after their welfare. When a girl leaves there, she can sew, cook and look after a home better than the average child who has the guidance of parents. Boys get general training on the farm and in using tools. Fred L. Mahannah is superintendent.

The canned fruit exhibit displayed by the Mount Pleasant Hospital was one of the best, if not the best at the fair, practically all of the work being done by patients. Within the last two years, the institution has preserved 23,239 gallons of fruit. This year's crop of strawberries totaled 25,000 boxes. Patients make tinware for the dairy, mattresses, brooms, and a great many other products. There are 1,100 acres in the farm, and 1,200 patients. Mr. and Mrs. Fitzgerald had the exhibit in charge, and Doctor Applegate is the superintendent.

The Independence Hospital farm embraces 1,349 acres, and there are about 1,200 patients there the year around. Cecil Blair had charge of the exhibit, which was a credit to the institution. Doctor Crumbacker is superintendent, and he reports that two out of five patients are discharged or sufficiently improved to take their places at home.

Industries taught at the penitentiary at Fort Madison were emphasized in the exhibit of this institution. Hundreds of rugs, which are made at the rate of 300 daily, were sold to fair visitors. Besides the manufacturing work, the 700 patients do the work on three farms, which comprise 1,500 acres Thousands of brooms are made annually, and the plant includes a sweeping ompound industry. Warden Sanders has charge of the institution, and J. F. Slifsgard looked after the exhibit.

Boys at the Eldora Industrial School are getting training which is modeling them into men, and when they leave they are qualified to make their way in the world at some useful trade. The exhibit in charge of W. L. Kuser, superintendent, included clothing, printing, steel tools, harness, shoes and signs, as well as other products made by those who have found their way to the school as the result of unfortunate circumstances. The farm embraces about 840 acres, and there are 420 pupils.

BEEF CATTLE.

Iowa is a pace-maker in the cattle industry. As a feeding ground, her place is well known, and no state is fostering the breeding of pure-bred cattle more carefully nor more keenly than is Iowa, and the sterling class of men which go to make up the Iowa beef-breeding fraternity. Traveling right beside the Iowa contingent, and working harmoniously with them, is the great group of breeders from the other corn belt states, and all together these forces are moving mightily toward the common end of producing more and better beef cattle, that ultimately the corn belt will be maintaining an agriculture of guaranteed permanence because founded solidly upon the basic rock of live stock farming.

As one who has been constantly in the attendance at the Iowa State Fair looks back in mental review of the great show, his mind is beggared for adequate terms in which to suggest even the high lights of so superb an exhibit. The wealth of numbers, the sterling class quality of the entire exhibit, the well-rounded character of the display, all were beyond the expectations of the most hopeful. The numbers were far in excess of those of any previous show. In nearly all the breeds, classes of small numbers were the exception, while the average number of animals in the classes of practically all the breeds was from ten to fifteen entries actually shown. Never has there been a cattle show within the borders of the state which presented the same high class character of stuff shown throughout. Adherents of the various breeds were almost a unit in the declaration that their individual breeds had never before been so well represented, while they were equally positive that the all-around character of the show was not outdone by the exhibit of any particular breed. This latter feature, that of the uniform excellence, can scarcely be over-emphasized. With many of the classes showing over twenty head, it would have been almost as difficult a task to declare a real tail-ender as it was for the judge to say with certainty that absolutely the best animal in the class had been awarded the blue ribbon. Years ago, the Iowa State Fair had the reputation of being a show great in numbers of live stock shown, but that real excellence was only to be found amongst the prize winners, while a great mass of mediocrity was present to swell the numbers to braggart proportions. In point of size, the numbers have not lessened, but the poorer stuff has gradually been eliminated, until this year we are quite willing to risk the statement that not ten per cent of the cattle shown could really be classed as other than of excellent type and quality. America has afforded in the past many bovine shows of remarkableness, but the opinion of all breeders who were consulted concerning the 1916 Iowa State Fair exhibit, was that no greater show ever has been known. This opinion applies particularly to the well-rounded character of the show throughout, but, of course, does not apply specifically to the exhibit of every particular breed. Bearing the above statement in mind, the highly gratifying fact to Iowans is that after all is said and done, the bulk of the show was made up of Iowa cattle.

SHORTHORNS.

The last six months have been fraught with great interest to the Shorthorn fraternity. History that will be of interest for generations to come has been written in a brief space of months. One climax after another has been recorded in the interest that has been taken in and the prices that have been paid for Shorthorn cattle. But it seems that the end is not yet. No greater event in Shorthorn circles has happened during 1916 than the wonderful display of the great cosmopolitan breed in Des Moines during the past week. The show was marvelous, both in quality and in numbers as well. In the senior bull calf class, fifty-two head were lined up for inspection, the largest class of Shorthorns ever shown, so say the deans of the show ring. Scarce behind it was the class of the same age for heifers, where forty-five were on hand. Numbers, however, were not confined merely to the classes of young things. Even in the aged bull class, thirteen head were out. It might have seemed an unlucky omen that this number was drawn for the first class, but if lack of luck was thus ordained, luck itself is incomprehensible. The aged bull class was one that will long be remembered, and its quality is suggested best not by an attempt to describe or compare the winners, but by the simple statement that some of the best bulls in the country, which have hitherto been accounted great, failed placing at all. Silver Knight, the winner, same to the top only with difficulty, fending off Marr's Avon by the barest margin. Only eight head were found in each of the two classes following, but the senior yearlings were an especially toppy lot, with not a bad one in the bunch. Village Supreme, the winner, is a youngster of magnificient type, size and covering, with all his quality not to be denied. Violet's Dale, the second bull, wants for little, but was lacking just a trifle in the handling that was shown by the Bellows entry. The real fireworks began with the junior yearlings, with Chief Champion finally coming to the fore in a well-deserving fashion. Three bulls contended strenuously for the second honors, and Silver Brown finally secured the position, but only in a questionable manner. Both the Rapp and Hill entries would have looked equally satisfactory in second and third positions, and would have left the top of the line a little more uniform in type. With the coming of the record-breaking class of senior calves, much time was spent and conscientious effort made by Mr. Ryden to pick the winners. The superior excellence of many calves which were found in this line-up of more than half a hundred youngsters, make absolutely safe the statement that no two men present would have picked the same half dozen calves to head the line. Therefore, it is not to be wondered at that some outstanding calves could not win first place, and while some onlookers expected to see the placing slightly different, all were agreed that no one man would have given more honest judgment than was given by Mr. Ryden after more than an hour's work of very careful inspection. Marr's Avon 2d, the winner, is a well-nigh faultless calf, and no calf of later time is so near a duplicate of Whithall Marshall as is this youngster. The claimants of the next four positions are best described by the simple statement that the second and fifth places were held by Villager calves, with entries from the Bellows herd carrying third and fourth places. We cannot pass up this class without mention of the Anoka entry, that stood sixth, a calf that surely will be heard from another season. The junior bull calves were only half as numerous, but presented almost as much difficulty of proper adjudication. Faultless Dale topped the class, and his name describes him. With a Cumberland calf in second place, further comment is unnecessary, while a son of Sultan's Stamp, carrying the true Sultan type, was satisfactorily found in third place. Among the matrons, the requirement of a suckling calf at side limited the number shown, yet eight families were in the ring, with a pair of remarkable cows contending for first place. Maxwalton Queen carried the blue, but Lady Devergoil was amply able for the same honors. The other cows were matrons of merit. Numbers began to be in evidence again with the entrance of the two-year-olds, and once more that herd which has furnished so many outstanding winners in the heifer shows for years, that of Rees & Sons, was on hand with stuff of an unbeatable kind. With the entrance into the show ring of the Violets, more than a dozen years back, they have been almost supreme. So, after all, it was only small wonder when the top of the two-year-old class was found in Lady Violet 7th, daughter of the famous Lady Violet 3d. Though white in color, instead of the usual roan, she is of that type and wealth of flesh and quality that have so long characterized this family. Simplicity 7th is a heifer of rare type and sweetness of character, while Dairsie Lass 3d was third only because of the two above her. Time was when Lady Violet 3d was a famous show heifer, but her fame was crippled after the show of senior yearlings, when, for the second time in this great show, a daughter of hers was again picked to head a class. No more need be said of Violet 8th than that she is a duplicate of her full sister, the two-year-old, and that they are both true daughters of their famous dam. East Lawn's Lassie was well deserving of her place, and Village Maid 3d is satisfactory in the way that the Villager type always is. The junior yearlings merely continued the competition between the Nebraska herd against all the rest, with one more daughter of Ruberta's Goods again topping a class. But this time two Village calves carried second and third honors. Anoka came to the fore with both first and second in the senior calf class, while Prather and Bellows Bros. scrambled for third and fourth. The baby calves, twenty-eight in number, continued the extreme excellence of the entire exhibit, and when the faultless little lady, Barmpton Flower, was given the blue, her faultless top line and wealth of calf flesh were so evident that satisfaction was well-nigh universal. The splendid massiveness and bold masculinity of Choice Cumberland vanquished Silver Knight, of superb quality, and there were veteran exhibitors who favored Choice Cumberland for supreme honors over the wide spread, thick fleshed Village Supreme. The story of the champion and grand champion cows is almost wholly a story of competition between the Violets, with the safe advantage of greater maturity being given consideration in placing the two-year-old heifer in the highest position.

ANGUS.

It is with no little hesitation that one begins an attempt to describe the finest show of Angus Doddies ever seen in America. Superlatives have been indulged in seemingly too often in recording the various chapters of bovine history which occurred at Des Moines during the closing days of August. Yet some of them—-the superlatives—must needs be used once more, for nothing less will adequately lend any suggestion of the unusual exhibit. Nine herds, carrying more than 150 cattle, were present; and since a full list of entries was found in almost every herd, the entire list of classes was quite well balanced. In but very few classes were no more than six or seven animals, led out—while a baker's dozen or more was the rule, especially among the classes for cows and heifers. Most of the stuff was brought out in prime condition, and never elsewhere was the superb flesh-carrying capacity of the breed better demonstrated, nor the characteristic smoothness and quality, no matter how high the condition, more fully illustrated. Aside from these expected features, another deserving of mention was the number of new herds in the contest. Half the exhibit was by new-comers, and to say that their initial performance was highly creditable is a mild statement.

Five aged bulls answered the initial roll call. Blackcap Star, with his level, balanced type, was preferred over the massive Ben Hur, though the latter is closer to the ground. Blackcap Bertram is showing the same good type, evenness and quality of last year, and assumed his old place at the head of the line, with the very low-set Knight of Rosemere claiming second. Blatant was rather outstanding among the senior yearlings. He has good lines, and both ends are satisfactory. The surprise of the show, perhaps, was found among the junior yearlings, for the top calf of this class, Epistos, is a remarkable calf. Well grown, smooth, even, and nicely balanced, he is a splendid type. So good, indeed, he is that Blackcap Bertram—who won senior championship honors—was forced to acknowledge defeat and allow the youngster the grand championship honors. The senior calves presented a problem. Variation in type was the thorn in the flesh, but a medium type was chosen to head the group, and by following it consistently, the judge steered a safe course. Less trouble of the same sort came with the juniors, but they were a good lot, requiring careful work.

It was a grand sight when the thirteen aged cows lined up in the arena. The best of the breed was present, and it was even more difficult to designate the last than it was the first. Honors finally went to the almost faultness typed Pride Petite with Quissy of Meadowbrook being nosed out only by inches. Indeed, little separated the animals in any of the placings, and we have seen classes with as much difference between first and second as there was between one and thirteen in this group. Said Judge John Robbins: "I have never seen another class of any breed to equal it." With the same number in, the two-year-olds were scarcely less remarkable than were the matrons; and all that has been said of the latter is about as applicable to the debutantes. It is useless to mention individuals, as there was too much of excellence to speak of in so brief a space. Again came thirteen —this time the senior yearlings. As the Irishman said, the first class may have been an accident, the second coincidence, but surely the third time demonstrated that it was a habit—nothing more need be said. Neither will we attempt to comment on the fourth class of thirteen lovely lasses that made up the junior yearling group. It is enough to say that though size diminished, as the younger classes kept coming, merit did not. Only eleven senior calves appeared, but an even dozen of the youngest sort were ready for their initial appearance. Among them came Queen of Rosemere 5th, a little lady all dressed in black, so dainty and winsome, so typical and characteristic, that after winning the blue, she was declared deserving of the junior purple. With her tender age, she did not show sufficient development for further honors, and Pride Petite gained the premier award.

The group shows were only repeated displays of the former magnificent exhibits, except that the repetition was on a far more generous scale. Surely, the disciples of McCombie and Watson in this country have no reasons to feel daunted, or ever to veto their slogan, "Black and all black; the Angus Doddie, and no surrender."

HEREFORDS.

Fewer numbers were cataloged for the Hereford display than were found in the Shorthorn class, but quality was the watchword of the show, and really some previous Hereford shows at the Iowa State Fair can be said to have been better only because more animals of outstanding merit were shown. The show was not small in numbers, however, and with ten to fifteen head competing in most of the classes, competition was strenuous. The Hereford show differed from that of the Shorthorns at this fair in that it was not so largely a show of Iowa cattle, yet outsiders had no edge on the premier positions at this fair, for Tow, Cassady & Son, and Mayne & Brazie are names to be conjured with in any Hereford competition. Gay Lad 16th led the galaxy of aged bulls, carrying his extreme width and thickness in a remarkable fashion. The two-year-olds brought out only five head, but among them some of the greatest bulls America has produced. Bocaldo 6th, the winner of this class, was not only a bull of great scale and finish, with a true Hereford head and type throughout, but he also presents that suggestion of ruggedness and strength that is a true Hereford attribute, the one, in fact, which has enabled the sturdy White-faces to conquer the great southwest. Ardmore came well in second place, with flesh and character, but wanting a trifle in the top line. Only five senior yearlings were out, with really more than one type in evidence, while nine junior yearlings answered the roll, again bringing enough difference of type to cause a wide difference of opinion at the ringside. The placings of the judge, Phil Lee, in this class, while not criticised, were not agreed to by everyone, yet no two men on the ringside agreed with each other. The senior and junior calves were much more even in type and character. With the seniors, Rialto 2d was a winner, and a mighty even calf he is from end to end, and well covered. A Repeater calf of true Repeater type came second, with the good, even, thick-fleshed Prince Donald third. Another Donald bred calf, from Mr. Yost's herd, annexed the blue, while one of the Standards of the well-known rugged sort, but with flesh and character, came second.

GALLOWAYS.

As usual, the Galloway exhibit was small in numbers. The Croft herds, from Bluff City, Kan., and that of Swigart & Sons, of Salisbury, Mo., furnished the only competition. However, double entries from each herd was the general rule, and thus Professor Pew, who judged the Galloways, quite often found numbers and quality enough to require considerable work in making the awards. Though the Galloways do not hold the place in the corn belt shows that do the other beef breeds, they added their share to the class and quality of this heretofore unexampled display of bovine herds. In fact, we do not recall ever having seen so meritorious a lot of Galloway bulls as were found in the various classes led out. Classes for cows and heifers also brought out animals of excellence, and the winners of championship honors in both the bull and the cow classes were animals which were not only of creditable Galloway type, but also of true beef type and conformation.

DAIRY CATTLE.

Mere recitement of bald facts and plain figures can convey little of the class or quality of the dairy animals shown during the sixty-second annual Iowa State Fair. Though Iowa is a leader in beef production, many sections are finding the dairy cow an especially valuable assistant in obtaining dividends from high-priced farm lands. Various sections prefer different breeds. So we find a representative show of the four leading breeds at the great annual competition at Des Moines —in fact, a most admirable feature of this fall show was the well-balanced display. The Holsteins probably led in numbers, but the Jersey, Guernsey and Ayrshire classes all were well filled, each breed having several different herds on the grounds. Absence of tail-end animals among the different classes also was a notable feature. The expression of the judges along this line was uniformly commendatory and freely given. The condition and excellent manner in which practically all of the entries were displayed, not only added materially to the high-class character of the show as a whole, but were decidedly creditable to the owners and herdsmen in charge.

AYRSHIRES.

Among the Ayrshire herds, those of Seitz & Sons, Doctor Roberts, and the Galloway-Messer Farms, were of especial merit. The first mentioned herd succeeded in winning most of the premier prizes, being especially strong in the get of the famous bull, Imp. Bargenock Gay Cavalier. The fitting of the Seitz cattle was a strong feature of this display, though little less can be said of all the entries. Much interest was attached to the judging of the female classes in this breed, especially as championship honors were being neared. Nona Goodgift, phenomenal heifer, grand champion of last year's National Dairy Show, was at Des Moines, ready to try for the highest honors again. She has come on wonderfully well in sweetness of type and character, and after a struggle, was successful in winning junior honors. However, Imp. Kilnford Belle 4th, Seitz's blue ribbon winner in the aged class, presented such faultless type and mature development, that the immaturity of the younger champion left the older cow with the higher honors. Competition was also keen in the bull classes for the highest honors, but the greater maturity and development of the aged bull was finally a deciding factor in his favor. Although the Seitz entries carried away more ribbons than any of the other herds, they had the stiffest kind of going all the way through. The Galloway-Messer herd was exceptionally strong in the younger classes, with Dr. Roberts' herd almost equally good. Ferndell Farm, a new exhibitor here, made an exceptionally good show for a novice. As a brief concluding remark, it is probably safe to say that no greater Ayrshire display ever was held in this country, and it is questionable if an equal number of cattle of equal merit could be gathered together anywhere in the United States, unless some of those here present were included. James Watson, of Kansas City, Mo., was the efficient judge of the classes.

JERSEYS.

The Jerseys presented a magnificent line-up, especially in the female classes, where the numbers were larger than in the classes for bulls. An outstanding feature of the Jersey display was the very satisfactory quality of practically all the entries. The herds of Mr. Young, of Nebraska, and Mrs. Fabyan, of Illinois, were brought out in almost perfect condition. It was the opinion of Mr. Will Forbes, who placed the classes, that never before in his wide experience as a judge of dairy cattle, had he worked over animals which handled so satisfactorily. Space limits mention of individual animals to a very few. Stockwell's Champion, the grand champion bull, was one of the best Jersey bulls that has been seen in Iowa for a long time. Of impressive style, type and quality, and fully developed, he was rather an outstanding individual, making his way through to premier honors without any great difficulty. Combination's Premier Junior, the junior champion, is a youngster of bold masculine and impressive character. Perhaps the feature of the entire exhibit of females was the ring of aged cows, seven in number, typical to an individual, and presented in faultless condition, they provided a rare study in quality, feminine character and Jersey refinement.

GUERNSEYS.

The Guernsey exhibit was not overly large, but, in point of merit, probably equal to any breed of cattle on the grounds. It is an unquestionable fact that there is not an equal number of Guernsey cattle of the same merit to be found in the United States, outside of those which went to make up the exhibit at Des Moines last week. While the well-known herd of Mr. Marsh, from Waterloo, was an especially strong factor in the show, the herds owned by Wilcox & Stubbs and the Jean Duluth Farms were of extraordinary individuality. The Guernsey show was especially commendable in that, while there were many animals of outstanding merit and distinction, that these same animals were well backed up in the various classes by individuals of worth. Tail enders were a minus quantity in the Guernsey show. Hayes' Cherub 2d, the grand champion bull, is a marvel of male dairy excellence, but perhaps of no more outstanding merits than was the grand champion cow, Hayes' Wena 4th. These two animals, together with Flora's Memento, the junior bull champion, were some of the outstanding animals of the Marsh herd. Grees' May Rose, from the Jean Duluth herd, was champion heifer, a youngster of size, quality and excellent Guernsey type. The Jean Duluth herd was peculiarly strong in the show of young stuff sired by May King Linda Vesta. The get of this famous sire had never been defeated until this show, but honors here were accorded the get of Hayes' Cherub.

HOLSTEINS.

The Holstein cattle continue to be the most popular dairy breed in Iowa, so far as numbers are concerned. This year, about 150 head were exhibited, with practically the entire lot showing type and quality to a greater degree than has heretofore been seen at Des Moines. The individual exhibits were keenly contested, and in every class the winners were animals of note, but perhaps as strong as was made anywhere was in the group displays, where the uniformity of type and excellence of character throughout, indicated the measure of success which the Holstein breeders have already attained. Among the females, many cows and heifers of particular merit were found, three of which, in the aged class, were placed over last year's champion, Fay Jewel

Queen. However, a still better individual was found among the three-year-olds, in Jewel Walker Gerben, and accordingly senior and grand champion honors were awarded her. The Galloway-Messer Farms also presented Hengerveld King for grand champion honors in the bull division, and perhaps no better suggestion of the merit of this animal can be given than that suggested by the judge, who declared that his strongest point was in his having no weak points. Roberts' Abbekirk Pontiac, the junior champion bull, is a youngster of excellent Holstein type and development. Iowana Pauline was the junior champion heifer, winning this place because of her excellent development in size and breed character. Taken as a whole, the exhibit of dairy cattle for 1916 was one that was eminently creditable both to the individual breeders and to the state. Also, it was fully significant of the great strides that the dairy industry is taking in Iowa, with indications of tremendous development in the future.

THE HORSE SHOW.

The 1916 exhibit of horses at the Iowa State Fair was an abundant credit to the great state of Iowa, and an equally splendid example of the constructive work in horse breeding that is being done in the corn belt region. The wisdom of the board of directors of the fair, in starting out several years ago to make the show in Iowa a breeders' exhibit, is now being demonstrated. Splendid displays of equine excellence were seen at this point a decade or more of years ago, but at that time it was practically altogether an importers' and dealers exhibit. If anything happened to cut out the exhibits of one or two men, the show suffered accordingly. With the beginning of the effort to stimulate the showing of home-bred stuff, the Des Moines horse show took on a new feature of development, and has progressed along this line at a rate which has surprised even the most sanguine. No better draft horse display has ever been seen on the state fair ground than was shown this year, and a splendid feature of this great exhibit was the balance of the entire display. The features of the show were the large classes in the futurities and open classes for youngsters, and the uniform excellence and development of these American-bred colts. It was a ready remark by many competent observers that any group of European colts ever imported would have found it a difficult task to win largely in competition with the winners of the Iowa show this year. The bulk of the exhibit was shown by breeders living within the state, and it is a clearly demonstrated fact that the draft horse industry in Iowa is on a particularly sound basis, and well in the lead of that of any other state. Iowa breeders have not only shown fundamental wisdom in the selection of the proper sort of seed material for the establishment of their breeding studs, but they have also already demonstrated their ability to develop and bring out their young stuff equal to that of any other breeders in the world. With the success of the pioneers in the draft horse industry many farmers all over the entire state are becoming interested in producing first class pure-bred colts. We feel sure that it will be but a short time until draft colts of unquestionable quality and value will be found in every section, and that Iowa will then be the same outstanding leader in the draft horse industry that she now is in general agricultural production.

BELGIANS.

Belgian interests have probably made greater strides in Iowa than any other. We do not mean that there are more Belgian horses being bred in Iowa at present than there are of the other breeds, but the type and character of young stuff that is already being produced on the various Belgian breeding farms, and the co-operative, get-together spirit of the men who are engaged in producing this particular type, are scarcely to be equaled by the interests of any other breed. The Belgian show this year was one of particular merit. Breeders of Belgians in Iowa practically have combined to make this state the nursery for Belgian horses of the highest class; in fact, better than can be produced anywhere else on earth. Speaking again of the excellence of the exhibit, J. B. Conner, who is secretary of the Belgian Breeders' Association, was positive in the statement that never before has a better all-around Belgian show been seen in the United States. Mr. Alexander Galbraith, that veteran horseman of more than forty years' experience and knowledge of horse conditions in both the Old World and the New, placed the awards in the Belgian division, and after completing the work, said that not only was it the best exhibit he has ever judged, but that it was to him a remarkable revelation of the tremendous strides that Americans have made in producing draft horses. We do not feel that it is necessary to speak in detail of the different classes or individuals shown, because to comment on part and not all would be most unsatisfactory. Yet so splendid an exhibit as was led out by Mr. Crownover, in the show for get of sire, can scarcely be passed without comment. In an equine exhibit, replete with features, this show of get was an outstanding feature. The reputation of the Irvinedale Farm was ably maintained in the strong competition, while Champlin Bros. contributed largely to the success of the exhibit. More than a dozen other breeders helped to swell the number of exhibits, and put on this hitherto unequaled show. The classes were well filled throughout, giving the judge plenty of opportunity for discrimination, and in the futurity classes forty-six head were shown. The awards tell the remaining part of the story; it being necessary only to suggest that draftiness of type, substance and quality, and satisfactory underpinning, were the points which were kept always in mind in the placing.

PERCHERONS.

Taken as a whole, the Percheron show cannot be classed as having been of the same outstanding character as was the display of Belgians. Many of the entrants which are just starting on the circuit are not yet in the bloom that they will show later in the season. Also, it is probably safe to say that the general apathetic condition of the draft horse market for the last six months was slightly reflected in the general tone of the Percheron exhibit. Like the Belgian display, the Percheron show was supported principally by so-called small breeders. Less than 20 per cent of the stuff entered was owned by and came from the large establishments. Half a dozen men brought as many as ten head or more each, but the remainder came in groups of two, three, four and five horses. Among the leaders in the show was the great aged horse, Lagos, brought out by Singmaster & Son. This horse, which they purchased last year, and installed as the head of their great breeding establishment, has fully justified his selection to follow the other notable breeding horses which have been used by the Singmasters. Not only because of his ability to win is this true, but the fact that his first son was also a winner of the blue in the futurity indicates what his real value is going to be to the Keota establishment. The Singmaster entries were of high character throughout, and figured largely in the winnings. Percheron horsemen scarcely regard any Percheron show as complete unless the get of the champion, Carnot, are found in the ring. However, the Des Moines exhibit was not lacking in this requirement, as Mr. Corsa was on hand with fourteen head of horses, all of which were the get of the famous black horse. That they were fully the equal of any previous show of Carnot colts is beyond dispute, and Jimmy Johnson says that no other stallion that ever lived sent fourteen colts into a ring that were of the same type and class as are the fourteen Carnot colts Mr. Corsa is showing this year. All of the same pattern, they present a wonderfully attractive appearance to the casual observer, while to the thinking man, whether he be a breeder of horses, cattle, hogs, or other stock, they present undeniable argument for the use and value of the absolutely first-class sire. The better part of the Percheron display was found in the younger classes, with the futurity shows leading the lists both in numbers and in quality. Forty-five head of yearlings were found in the two classes, and the ringside was unanimous in its opinion that for uniformity of excellence and quality, these colts would be hard to duplicate, while, as with the Belgian futurity display, the growth and development of these yearling youngsters was a splendid tribute to the ability of our American horsemen.

CLYDESDALES.

The Clydesdale exhibit was not so large as that of the Belgians and Percherons, but was of class and character to delight the heart and eye of a Canadian or a Scotchman. Some of the old-time exhibitors who brought horses in large numbers were not present, and more to be missed even than his horses was the genial face of James McLay. It will be many a year before a Clydesdale show will seem as of yore, because of the absence of this man, who was outstanding in the work which he did for the Clydesdale and for the draft horse industry in the United States. As a whole, the Clydesdale show was well up to that of any previous year, and fully upheld its part in making this 1916 Iowa exhibit the greatest all-around show of draft horses ever seen in America. The Clydesdale, freed from the pressure of the importing business, is going to come into his own as one of the truly great draft breeds. Already, the Iowa breeders are showing horses of greater draftiness and weight in their bodies, and it is only a question of time until the heather breed will be famous not only for its unbeatable quality and great underpinning, but also for the other points which are required of a real draft horse in this country. As a point of assistance of real value to the Iowa breeders. Andrew McFarlane, of Palo, Iowa, was selected to do the judging, and it is a remarkable thing to say that he gave perfect satisfaction. No judge of the year has done a better piece of work than that done in judging the Clydes this year, and the Clydesdale breeders would be only too glad to welcome Mr. McFarlane as the judge in any future rings in which they may be showing. Among the stronger classes were those of the yearlings of both sexes, and the ring of eight stallions were all animals of real merit. Hope's Pride, the winner of the three-year-old class, is one of the really high-class horses of the breed, and Mr. Soderberg has also another coming youngster in the two-year-old, Barron's Hope.

SHIRES.

Among the Shires, the absence of the Truman Pioneer Stud Farm, of Bushnell, Ill., was keenly felt. With the absence of the number of horses which the Trumans usually display, the Shire show was much more limited in numbers than was that of the other draft breeds. The quality of the exhibits always brought out by the Pioneer Stud is too well known to really necessitate the statement that the Shire show suffered somewhat in quality because of lack in numbers. Only a limited number of entries were shown in the larger classes, with the two-year-old, Rock's Golda Conqueror, being one of the outstanding individuals. This youngster is a horse of great substance and form, while carrying with it quality of equal merit. Among the younger aged classes, quality was more in evidence among the fillies than those of the opposite sex. This was true of both the yearling and the two-year-old classes, taken as a whole. R. B. Ogilvie did the judging, in his usually satisfactory manner.

PART V

Extracts from the State Dairy Commissioner's Report for Year 1916

W. B. BARNEY, Commissioner

As the Federal Food and Drugs Act and Dairy and Food Laws of this State became effective ten years ago, I believe it fitting at this time to recognize the benefits derived by the consuming public and honest dealers, not only in this State but the entire nation, resulting from the enactment and enforcement of these laws.

The object of our State Dairy and Food Laws is to promote the dairy industries of this state, to prevent the manufacture and sale of dairy or other food products containing harmful or deleterious substances, and to prevent fraud in the sale of food products. While the later object was quite adequately covered in the laws enacted in 1906, it was found difficult to give the customer the desired protection from many forms of contaminated and undesirable products. This difficulty was removed in 1913 by the enactment of the Cold Storage Law and the Sanitary Food Law by the Thirty-fifth General Assembly. In their present amended forms, Iowa's laws pertaining to the manufacture and sale of dairy and other food products give purchasers the assurance that the products are what they purport to be, in kind and amount; that they are free from deterioration and unwholesome additions, and that they possess their full nutritive value.

The consumers' interest we have consistently endeavored to protect without working an unnecessary hardship on the honest manufacturer and dealer. The department has not busied itself in looking for cases arising out of mere technical violation of the laws enforced by us, but has never failed to institute vigorous proceedings whenever such action was necessary. We believe that the enforcement of food laws is contributory to the moral force of a community and that the failure to enforce the law may contribute to the promotion of dishonesty. This point can perhaps be best illustrated by citing a common instance, as follows:

Linseed oil is a staple article of commerce, handled frequently by the druggist, the hardware merchant, the implement dealer, and others in small towns. Say there are six different dealers handling this product and the wholesale price is such that a pure, unadulterated oil cannot be retailed at less than 90 cents per gallon. Five of these men are by nature honest, one of them is a natural born crook and adds to this linseed oil 20 to 30% of inexpensive petroleum oil and cuts the retail price of his oil to 80 cents. The consuming public is all in favor of one price, and that the lowest. The result is that the unscrupulous dealer receives the patronage and the other five dealers, in self-defense and with many qualms of conscience, also add the adulterant to meet the cut price. We now have six dishonest men, where there was but one before. This sort of thing has and may happen where laws regulating such matters are not enacted and enforced. On the other hand, if the department prosecutes and convicts one or more of these dealers, the prosecution has a wholesome effect on the entire community, causing them to respect this, as well as other laws.

CONCENTRATED FEEDING STUFFS.

I know of no field in which an efficient system of inspection is more effective than in the present feeding-stuffs industry. These commodities are purchased in car load lots by many of our feeders of hogs, horses and both dairy and beef cattle. The so-called feeding-stuffs industry has grown at a remarkable rate during the past few years, and the cash value of shipments are larger than the casual observer would estimate.

In control of this and similar commodities shipped into the state, co-operation with the Federal authorities is a necessity.

During the past season our inspectors sampled over 150 car-lot shipments of cotton seed meal, valued at approximately $12,000.00. Of the 150 cars sampled over 100 were found to contain from 2 to 25% less protein than the label declared, or the purchaser's contract called for. As these feeds were bought and paid for before delivered, and neither the shipper nor shipper's agent were located in the state, the purchaser could receive no protection from the state law.

Were it not for our co-operative system with the federal authorities we would be in a compromising position indeed.

At the time of our first experience we took the matter up with Mr. Tolman, Chief of the Central District, U. S. Food and Drug Inspection Service, and worked out a method which not only puts a stop to the future illegal shipments, but compelled the shippers to reimburse the purchasers for the deficiency in feeding value of the shipments which had been delivered. This plan has been so effective as to return to Iowa purchasers over $3,000.00 since the campaign instituted in February. Mr. Tolman has given the Iowa Department every assistance that could be asked. I believe that the authorities works to the mutual advantage of both departments; the questions of responsibility and jurisdiction are thereby eliminated.

RULINGS AND HEARINGS.

Each year there are many problems which arise relative to the application of the law to certain commodities. Where the effect of a ruling of the department is far-reaching enough to justify it, we hold a public hearing on the subject. At these hearings, dealers and manufacturers are invited to express their views in order that the decision of the department may be as consistent with good trade practice as a full protection to the consumer will permit. These hearings have an important bearing on the harmonious working of the decision after it is made.

As the better class of manufacturers, jobbers and vendors of products come to a better understanding of our problems and the laws closer we work in co-operation with the federal authorities in matters of inter-state shipments, the greater protection we can give the purchasers and consumers of our own state, as well as promote the establishment of uniform laws, rules and regulations. I would like at this time to call your attention to the fact that the volume of work done in co-operation with the United States Department of Agriculture has increased at a remarkable rate during the past year. In Iowa alone our state inspectors have taken over seventy-five inter-state samples (principally feeding-stuffs) since the first of the year. Close working co-operation between the federal and state and regulations, of which we have the enforcement, I believe we must all admit our work is lessened. Some members of the trade have been a long time in arriving at the conclusion, that while the food laws were enacted primarily to protect the consumer, they are in fact as helpful to the honest dealer as to the consumer.

Co-operation between the trade and the law-enforcing body has been, and will be, an important factor in this work. I am perfectly free to admit that I never recommended an amendment to an old, or sanction the enactment of new legislation without discussing with a committee, or others interested, the effect that may be expected. From my contact with the trade during these meetings, I have reached the conclusion that a very large percent of the trade is trustworthy and dependable, and all that they desire is what is right, reasonable and just.

For some time my conclusions have been that there is no calling in life in which we do not find a few men who will, for pecuniary gain, use dishonest methods, or what we might less harshly term, sharp practice. But this is no reason why the better class of men in the trade should not, to a certain extent, be taken into our confidence.

It becomes comparatively easy to enforce a law or regulation where seventy-five, or a greater percent of the trade to be regulated, are perfectly willing to comply.

The very nature of our work qualifies us to know what is best in the way of legislation. We, therefore, invite consultation by the members of the legislature as to the enactment of new, or amendments to old laws, the enforcement of which we have in charge. Our scientific staff is also at the disposal of the members of legislature for the purpose of supplying information of technical nature.

INSPECTORS.

I attribute much of the success of the department to the fact that we have not been hampered by being compelled to take into the service men who are not qualified for their positions by training. The scientific nature and commercial importance of the several lines of work pursued by us makes it necessary that none but men trained in their respective lines be employed. Were we compelled to accept the services of men as a reward for their political activity, much of our work would, necessarily, be slighted or left undone.

As in any other business enterprise, we could not expect men, schooled in another line of work, to make good. Our state recognized the principal that if the head of the department is not qualified to select his assistants, he most certainly is not big enough to get the work out of them after they have been selected by someone else.

Experience in the practical workings of the department has demonstrated that the best service is rendered by a division of the work into three classes.

To carry out the provisions of the dairy law having for its purpose the promotion and extension of dairying, as well as the standardization of dairy products, we must employ for inspectors men who are schooled in dairy science and qualified by experience in the field.

The manufacture of butter is based upon sound scientific principals and only those who are familiar with the art are competent to be of assistance to the creamery in need of help.

To be of service to us the inspectors enforcing the food and sanitary laws must be familiar with commercial channels through which food-stuffs are marketed, must be conversant on the subject of proper methods of handling and storing foods, and must possess sufficient training in sanitary science to secure a practical application of the several laws.

The testing of wagon and track scales is another work calling for special training. To do this work properly and render the scale owner the service he is entitled to for the fee paid, the inspector must be familiar with the construction and installation of scales and should have sufficient training in this line of work to be able to make necessary adjustments. He must be competent to advise scale owners as to what repairs are necessary for defective and worn instruments. Modern weighing devices from the small computing counter scales to the large automatic hopper scales and track scales which weigh a car of grain as the car passes over are complicated mechanism which cannot be "puttered" with by the novice.

From the above statements it may be seen how hopeless the task would be to select eighteen men capable of doing the several lines of work properly.

The state is no more able to employ men who can do successful work in diversified fields than are the large manufacturing concerns who must employ different salesmen to represent them in their different lines.

As a matter of fact it is difficult for this department to secure and retain the services of men who are competent to do the work in the various fields pursued by us. The experience gained by our men qualifies them in a few years for positions at an advance in salary and the state is compelled to compete with commercial concerns for their services.

Our salary limits have remained substantially the same as those in force ten years ago regardless of the fact that the cost of all of the necessities of life have risen. I feel that I cannot maintain the present efficient service unless the salary limits effecting the men of this department are substantially increased.

LICENSE CLAUSES.

The so-called license sections of the laws enforced by this department have now been in effect long enough for us to judge their practical application. I am now obliged to say that the license feature is one of the best and most helpful sections they contain. I believe I am fair when I state that the license clause of our sanitary law has cut down the total number of prosecutions under that law over one hundred percent. Although numerous threats are made to bring about desired improvements, we have not been obliged to revoke more than a dozen licenses a year. The revoking of a license is a ''big stick'' with which to line up the wilful offender.

Since the sole power of revoking a license is vested in the Commissioner, results can be rapidly obtained and immediate results are possible in drastic cases. You can thus see that the pecuniary gain is not the only advantage to the people and the department of what is often termed the license clause.

This state has been particularly fair in the matter of license fees. They range from $1.00 per year, the fee of a milk dealer's license, to $3.00, the fee for licensing and testing commercial wagon scales. Although the individual license fee is small, the total revenue derived by the state from this source is large. It has increased from $9,593.24 in 1909 to $61,621.76 this year. All license fees collected by this department are paid to the state treasurer.

The following table shows the annual revenue derived from licenses, tax tags, etc., turned over to the state treasurer during the past eight years:

1909	$ 9,593.24
1910	17,435.30
1911	20,892.97
1912	22,049.02
1913	36,504.52
1914	43,842.40
1915	50,244.10
1916	61,621.76

Fines collected under the laws enforced by this department are not included in the above for the reason that these fines were paid into the schoool fund of the county in which the cases were prosecuted.

County attorneys have reported a total of $3,920.00 in fines collected and turned over to the county treasurer of the state as a result of prosecutions instituted by this department, and rebates to the amount of $3,000.00 have been collected for Iowa purchasers as reinbursement for shortages in food value of concentrated commercial feeding-stuffs delivered from foreign states. Items enumerated above show the total collections of the department to be $68,541.76.

The total salary and expense of the department was $75,240.55.

There being but $7,698.79 more than our receipts paid for the maintenance of the department, shows that the department is practically self-sustaining.

From the above figures we learn that the per capita tax of maintaining the department is less than one-third of a cent. This figure, so far as I am able to determine, is the lowest required by the department of any state for the enforcement of effective pure food, dairy and weight and measure laws.

EDUCATIONAL WORK.

The educational phase of our work has been given considerable attention this year. The rapid increase in price of most of our staple foods has called for greater economy in many homes. It has been our desire to acquaint the housewife with facts pertaining to the nutritive value of the various foods in order that the consumer may be better enabled to meet the demands of the body and purse. To this end we have exhibited at our larger fairs a practical demonstration of the value of our staple food-stuffs. We have also issued news letters from time to time to the public press of this state. These letters go to the agricultural press, to three to four hundred weekly, and a number of daily papers. We find that they give us a way to keep the public well informed on current food subjects. The letters are designed to supply information which will promote more careful buying and assist in the work of the department.

We have supplied a demand for speakers from this department to give talks at Dairy Picnics, Dairy Trains, Farmers' Institutes, Pure Food Shows, Chautauquas and Women's Club meetings. We believe that a better acquaintance with the laws on the part of the manufacturing and jobbing interests and the consumer is a step forward in food law enforcement. In our talks before women's clubs we never fail to impress upon them the fact that neither the proprietor of an insanitary place, nor the short weight artist can remain in business unless patronized. We strongly urge, as a means of cooperating with this department, the patronizing of clean establishments and honest dealers.

NEEDS OF THE DEPARTMENT.

In my report for the year 1912 I called attention to the need of a new building in which quarters, meeting the requirements of our offices and laboratories would be possible. Since then we have been given some measure of relief by the enlargement, from time to time, of the quarters in the present building.

This department has grown very rapidly. In part this has been due to the placing in our hands additional laws to enforce, but more especially to the increasing importance of Iowa as a food producing and food manufacturing state.

Our present location in an old flat-building is inadequate and not adapted to facilitate the work we now have to do. The chemical laboratories need rearrangement, and new equipment should be provided. Separate rooms are needed for the proper handling of our bacteriological work and a separate room should be provided for the calibration of weights and measures. A fire-proof vault should be built to store the state weight and measure standards; the law covering this matter makes it the duty of the Commissioner to keep these standards in a fire-proof building. The testing of agricultural seeds calls for active work in the early spring, at which time numerous samples are submitted for immediate report. While we have sufficient apparatus to take care of the work, more adequate quarters would permit of an arrangement whereby this would be facilitated.

A steam supply from the central power plant must soon be provided to operate numerous pieces of laboratory apparatus and our electrical wiring should be put in a satisfactory condition; most of the installation is old and of a temporary nature. Ventilating and sewer systems are also inadequate. As our present building cannot be used by us any length of time, I have not wasted money to effect costly changes upon it.

I trust the contemplated office building will be provided for by the next General Assembly and that we may soon have relief from these difficulties and facilities provided in order that we may conduct our work in a more business-like manner.

EGGS.

I make special mention of this subject owing to the important position which this state holds as a producing center of high grade eggs and the necessity of stabilizing the market by an effective inspection system.

The great bulk of our egg crop goes on the market during the months of April, May, June, July and August. During the first three months, due to the cool season, the eggs are of uniform good quality without any special care being exercised by the producer. As the hot weather of July and August appears, the quality of eggs falls rapidly and unless precautions are taken to see that none but sound fresh eggs are marketed, the price paid the farmer falls with equal rapidity. Farmers never did, nor never will, receive pay for the bad eggs they took to market. When buyers find that the eggs marketed in any locality are not good they immediately lower their quotations to compensate them for the loss and expense of handling the bad eggs. They base their price in such a way that the farmers receive compensation for the good eggs only, less the cost of candling, crates and transportation charges incidental to shipping the bad eggs to market. As the cost of crates and transportation is as great for bad eggs as it is for good ones, shippers will generally quit buying when the quality falls very low. Small producers in these localities can then find no good market for their product; if they do find a market they must sell at a price below the cost of production.

Situations similar to the above are prevalent in states which do not maintain a system of inspection which will protect the buyer from deliveries of stale, bad and incubated eggs; the condition prevailed in Iowa prior to 1915.

Early in 1915 and again in this year we instituted vigorous campaigns, the purpose of which was to secure a steady market for Iowa eggs during the months of July and August by preventing the entrance into commercial channels of low grade eggs. The desired result was brought about by prosecuting the wilful offenders and carrying on such educational work as would teach better methods of gathering and marketing.

The result of this work was that during the year 1915 Iowa farmers received an average of one to three cents per dozen more for their eggs than did the farmers of Missouri and Nebraska. In the jobbing trade the Iowa product brought from 75 cents to $1.00 per case more than did shipments from northern Missouri.

Many Missouri shippers soon took advantage of this situation by consigning their eggs to Iowa pionts for reshipment, thereby securing the high price of the Iowa product. Being unrestrained and interested in price only, these shippers used this method of marketing their low grade eggs and shipments containing rots and spots as well as shipments of good eggs. A demoralization of the Southern Iowa market was threatened. Our inspectors working in co-operation with the federal authorities have this year put a stop to the practice by prosecuting over thirty offenders.

Within the borders of our own state there were thirty-two successful prosecutions for the sale of bad eggs during the month of July and August. The largest consignment effected was shipment of 500 dozen; these being unfit for food were ordered destroyed.

Figures for production of eggs during the year 1916 are not available, but during the year 1915 Iowa farmers marketed 120,930,552 dozens of eggs for which they received $20,593,720, a sum about equivalent to one-tenth the value of the corn crop of the same year.

A conservative estimate of the result of our activities shows that we have secured for the Iowa farmer an increase of $500,000.00 in return for eggs.

WORK OF THE LABORATORY.

Chemical analysis made in the laboratory of the department from November 1, 1915, to November 1, 1916:

Cream and Milk	1,636
Ice Cream	254
Paints and Linseed Oils	56
Miscellaneous Food Products	250
Stock Foods	208
Bacteriological Analyses	661
Samples for Attorney General	247
Samples for County Attorneys	45
Samples for Commission of Pharmacy	24
Samples for Board of Control	2
Agricultural Seeds	1,096
Total	4,479

Samples of milk and cream examined by local state milk inspectors working under the State Dairy and Food Commission:

Boone	395
Burlington	814
Cedar Rapids	2,104
Clinton	756

Council Bluffs	624
Davenport	896
Des Moines	1,060
Dubuque	888
Fort Dodge	606
Iowa City	612
Keokuk	716
Marshalltown	510
Mason City	648
Muscatine	393
Oskaloosa	100
Ottumwa	738
Sioux City	1,764
Waterloo	732
Total	14,356

During the year ending November 1, 1916, our inspectors have inspected a total of 24,852 establishments as follows:

Grocery	4,620
Meat Market	3,144
General Store	3,516
Bakery	888
Slaughter House	156
Restaurant	2,004
Coal Dealer	840
Elevator	1,092
Feed Store	420
Ice Cream Factory	960
Creamery	1,740
Dairymen	648
Farm Dairy	324
Confectionery	936
Wholesale Grocer	156
Seed Dealer	48
Bottling Works	96
Cream Station	1,860
Produce	1,044
Miscellaneous	360
Total	24,852

WEIGHTS AND MEASURES.

During the past year the work of the Weight and Measure department has increased rapidly. Next year it will be necessary to appoint at least one other man for the heavy scale inspection work in order that this work may be given the attention it requires. With the same number of inspectors and charging a smaller fee, the total amount collected during the last fiscal year has increased nearly fifty per cent. Many times during the year it has been practically impossible for the department to take care of the requests for inspections. A majority of scale owners of the state appreciate the inspection service rendered by the department, realizing that if the scale is not weighing accurately they may lose their profit in a very short time or lose their business because of short weights.

The law provides that the department may charge for two inspections each year, but it has not been possible to inspect all of the scales even once each year. We hope, during the coming year, to improve the service in this department. With two weight and measure inspectors giving their entire time to the inspection of heavy scales and using one of the food inspectors in this work a few months, the department has inspected 2,268 "heavy" scales during the fiscal year. Three hundred and ninety-seven scales have been condemned for repairs or junked as unfit for use. Approximately 2,500 small scales have been inspected by the food inspectors, and it is the purpose of the department during the coming year to give a great deal more time to this work. It is also planned to go into the dry goods stores and ascertain the character of measuring devices used in these establishments. The Weight and Measure department covers a wide sphere, nearly every commodity bought and sold in the state being weighed or measured.

In addition to the inspections of scales, it is the duty of the inspectors to check the weights being given. Hundreds of coal .deliveries have been re-weighed, and some prosecutions have been necessary. A matter which has required a great deal of attention during the past year is the question of weights on articles sold by the produce and commission men, as, for example, potatoes, onions, apples, and other fruits and vegetables. The law requires that all dry commodities weighing ten ounces or more shall be sold by standard weight or numerical count. Sales of these commodities by the basket, box or hamper are in violation of the statute. The department is attempting to promote intelligent buying, and if this result is accomplished, consumers must insist upon buying by weight.

Shipments of gasoline and oils have been found in some cases to be short. The department is equipped to promptly determine the weights per gallon of liquids. If samples of liquids are sent to the laboratory together with the exact weight of the commodity, the number of gallons in any weighed quantity may be accurately computed.

Attention of the department has been called to a few dealers who still persist in taking more pounds per bushel of various grains than is allowed by statute, and in the absence of a written agreement to the contrary, the number of pounds provided by statute must be given.

The following sections should be familiar to every citizen of the state:

> "Any person, firm or corporation, who sells, barters, trades or delivers a less weight or amount to a purchaser than that which is asked for or agreed upon, of any article or commodity, shall be deemed guilty of a misdemeanor and shall be punished as herein provided."
>
> "Sec. 3009-p. If any person engaged in the purchase or sale of merchandise or other commodities by weight or measurement or in the employment of labor where the price thereof is to be determined by weight or measurement of the articles or thing upon which such labor is bestowed, be found having in his place of business any inaccurate scales, weights or measures or other apparatus for determining the quantity of any commodity, which do not conform to the standards of weight and measurement of this State, shall be guilty of a misdemeanor and upon conviction shall be punished as provided in this chapter."

The law provides that the department shall, as soon as possible after receiving a request, cause to be inspected any weighing or measuring device which is used to determine the price to be paid for labor in accordance with this statute. The department has made an effort to follow up all requests for inspection of mine scales and others of like character. With the limited number of men in the employ of the department, this has sometimes been difficult. However, very few complaints have reached the department on account of failure to act promptly. This is a matter which is of very great importance to thousands of employees as well as the employers, and with the additional help it will be possible next year to render even better service.

The department desires to co-operate with citizens in the enforcement of the law in order that we may bring about uniform conditions of buying and selling, make business relations more pleasant for the buyer and seller alike, and promote fair dealing.

FOOD EFFICIENCY.

We hear much in these days about preparedness. A people that is not well fed and nourished cannot to the fullest extent enjoy the blessings of peace or withstand the devastation and horrors of war. Wholesome, well cooked food will without doubt play a greater part and receive more consideration from this time on than ever before. If there is anything in the practical application of the precept that each man must be his brother's keeper, it will apply with double force to a food commissioner and every food inspector in this land.

It was my lot to put in a number of years on the road, depending on hotels and restaurants for my meals. During that time I was too frequently reminded of the old saying that "The Lord furnishes the victuals and the devil the cooks." Our domestic science schools are doing the nation a great work in teaching proper methods of preparing foods for the table. It is my belief that much can also be done in the home. The housewife that cannot properly prepare, cook and serve a meal is not worthy of the name of wife. The mother that does not see that her daughter is schooled and learns the fundamentals of cooking is neglecting an important duty that she owes the daughter, the daughter's husband, if she has one, and the public at large.

Too many meals are eaten simply to satisfy the appetite, not because they are appetizing. If what we eat today is walking around, thinking and talking tomorrow, is it not equally as important to have this food or fuel for the human body properly prepared as it is to have it free from adulteration and of the proper kind?

A locomotive or other engineer would not expect to get good results from the use of an inferior grade of fuel. If a certain kind of coal is known to produce a given quality of steam, this dependable brand would be selected in preference to another having less generative power. For years a study has been made of the human fuel question.

It is well that of late more attention has been paid to the value of the different articles of food in common use. This question has an economic as well as a moral side. It matters little how well we know that 8 cents worth of milk (or one quart) equals approximately 15 cents worth of round steak, or 25 cents worth of eggs, or 75 cents worth of oysters, unless we do what we can to disseminate this knowledge.

For the past five years we have persistently endeavored to better inform the public with the food value of milk. Common with all other foods of animal source, milk is relatively rich in protein. This food constituent, present in milk chiefly in the form of casein, is indispensable for the formation of body tissues and fluids. Although the other food constituents (fat, carbohydrates and ash) are also present in good proportions, it is chiefly as a protein food that milk and milk products find their logical place in the diet; an easily digestible and economical substitute for meat and fish. If the food constituents of milk are compared with those of other animal foods, it will be observed that milk contains more carbohydrates and is free from waste.

Based on its total fuel value, a quart of whole milk contains the same amount of nutritive ingredients as three-fourths of a pound of lean beef steak or one-half of a loaf of bread.

About one-half of the total fuel value of milk is supplied by the fat it contains. In the skimming of milk practically all of this fat but none of the other food constituents is removed. Skim milk, therefore, possesses approximately one-half the food value of whole milk. It may be seen that as a human food skim milk is far from a valueless material. Consumed at the rate of a pint and a half a day, it will furnish practically all of the human body's daily demand for protein.

At moderately active muscular exercise a man must assimilate food containing 4.48 ounces (0.28 pound) of protein and possessing a total fuel value of 3,500 calories, if he is to retain his food bodily vigor. From the following tables, it will be seen that about one-third of this daily demand may be cheaply supplied by relatively small quantities of two of Iowa's leading agricultural products, corn and milk.

I am firmly convinced that when the public becomes fully informed as to the value of our domestic cereals served with milk, either whole or skimmed, they will be served more frequently at the breakfast table; and, if we would have a better and more economically fed people we should endeavor to increase the consumption of milk in the home 100 per cent.

On page 21 of this report we present a graphic illustration showing the relative cost of some of the more commonly purchased foodstuffs of animal origin. In this chart the dark areas show the portion of a dollar required to purchase an amount of the food equal in fuel value to a quart of milk. The values are computed from the average retail prices prevailing in October, 1916.

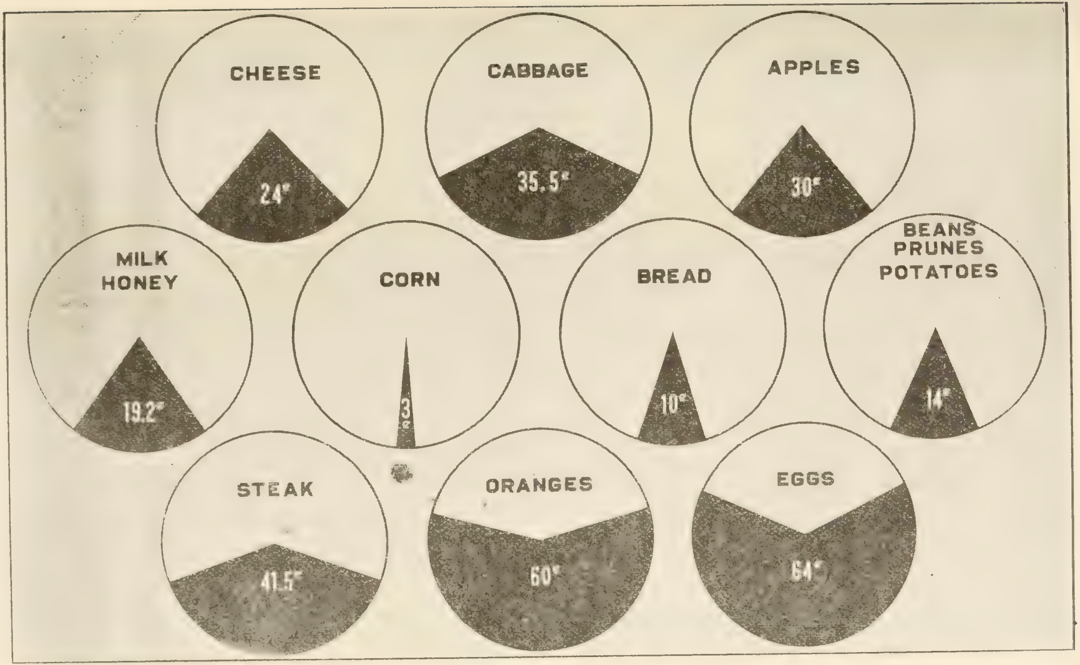


Chart showing part of a dollar required to purchase as much food value as is contained in one pound of corn.

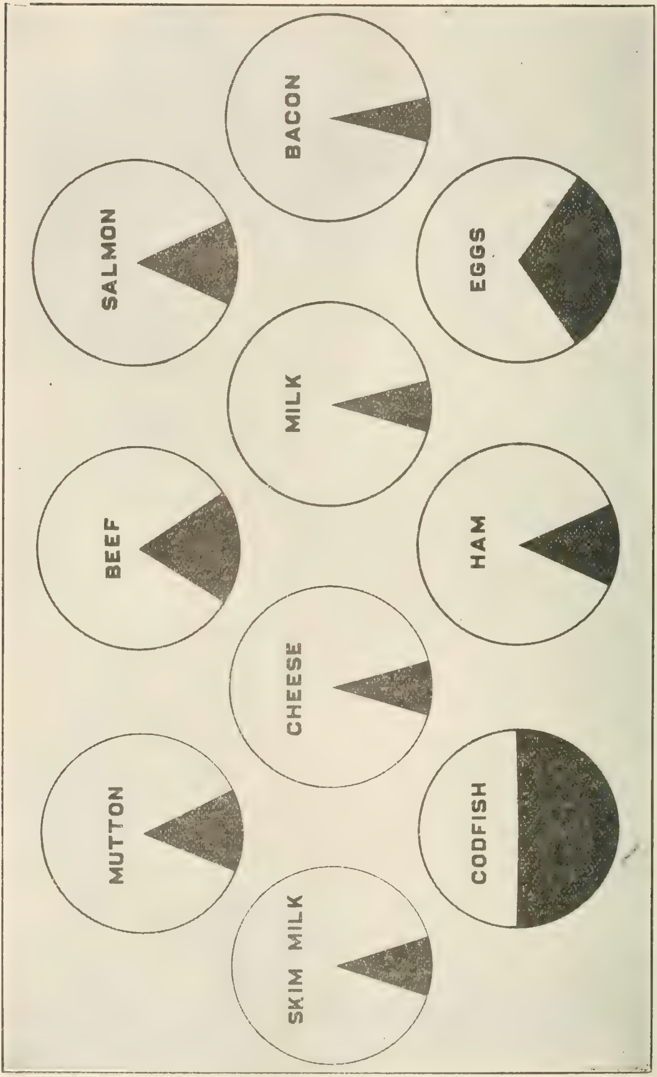


Chart showing the part of a dollar required to purchase as much food value as is contained in one quart of milk.

COMPOSITION AND COST OF A PORTION OF CORN MEAL MUSH AND SKIM MILK.

Food Materials	Amount	Protein	Fuel Value	Cost
Corn Meal	8 oz.	0.74	820	1.5
Skim Milk	1 pt.	0.60	182	2.0
Total		1.34	1,002	3.5

COMPOSITION AND COST OF A PORTION OF CORN MEAL MUSH AND WHOLE MILK.

Food Materials	Amount	Protein	Fuel Value	Cost
Corn Meal	8 oz.	0.74	820	1.5
Whole Milk	1 pt.	.58	330	4.0
Total		1.32	1,150	5.5

Aside from the value of milk as a low priced fuel and cheap source of protein, its life-like substances and life-giving properties are as yet little known to the public. Recent studies of milk and milk products have shown why physicians and dieticians are able to get results with milk that are not possible with other foods.

Scientifically these life-like substances are called vitamines. Their presence in milk and butter is very easily demonstrated. Vitamines are not present in vegetable oils, or the common fats used for the manufacture of oleomargarine. Oleomargarines contain the life-like substances only in proportion to the amount of butter they contain. We all know that most of the oleomargarine contains so small a quantity of butter as to be negligible.

MILK INSPECTION.

In the inspection of market milk and cream, as well as the inspection of dairies producing and milk plants distributing it, we have continued in our past policy. This contemplates the carrying on (together with the work of law enforcement) of such educational work as is necessary to induce the production of milk and cream of high quality.

There is no inducement to put forth special effort in the production of a better quality of market milk than a proper recognition of a product of merit. To this end we have conducted chemical and bacteriological examinations of the milk sold by the principal dealers of our cities. The results of these examinations have been published from time to time in the local newspapers in order that the consumer may know the quality of milk he is purchasing and select as his milk man the dealer with the best quality.

That the bacterial count of a sample of milk is a just indication of the care and attention under which it is produced and handled is a fact that cannot be disputed. The public appreciates this and the dealer whose published rating is unfavorable is sure to suffer by the loss of patronage. On the other hand, the dealer who puts forth effort to deliver milk which will receive a high rating deserves encouragement and generally gets it, in the form of increased business.

This year we conducted a milk scoring contest at the Dairy Cattle Congress. This contest differs from those previously held in that the dairymen whose milk was examined did not know that samples were being taken. Through the agency of the state milk inspectors located in Iowa cities of 10,000 population and over, we sampled the representative dealers in each of sixteen cities. This milk was expressed to the laboratory for examination and displayed together with its score at the Dairy Cattle Congress. This contest showed the relative quality-standing of the cities and in a measure the comparative efficiency of the work of the local inspectors.

Milk and cream contests in some form have been carried on at many dairy shows since the plan was first put in use at the National Dairy Show at Chicago in 1906. For all of these contests, however, the milk was submitted for the purpose by the dealer or dairyman. Such method of securing samples is not desirable as the sample submitted is not known to be a representative one of the milk product reaching the consumer. It merely shows what the dealer can do; not what he is doing, will do or expects to do.

From the results we have obtained, we believe that milk contests aid greatly in improving the milk supply. The samples of milk are scored and given a rating for bacteria, flavor and odor, visible dirt, fat, solids, solids not fat, acidity and appearance of the bottle and cap. In fact, every feature which the consumer may expect as regards wholesomeness and food value is considered. A copy of scorecard, together with the method used for assignment of score, may be found in our report for the year 1914.

Local state milk inspectors working under the Dairy Law and directed by this department have examined 14,356 samples of milk and cream secured by them in the course of their regular inspections.

THE DAIRY FIELD.

The past year has been another banner year for the production of dairy products. Our manufactured dairy products—butter, cheese, condensed milk and ice cream—have been marketed at a cash value of over $31,865,228.

Exact figures for the production of market milk, farm dairy butter, skim and butter milk are not available, but a fair estimate of the value of these increases the total value of the products of the dairy cow, exclusive of the value of calves raised, to $105,369,565.

The following table is an itemized statement of the values. Fertilizer is valued at the rate of $15.00 per cow annually; the value of calves is not included.

Creamery Butter	$27,127,228.49
Ice Cream	4,000,000.00
Market Milk	20,940,000.00
Cheese	150,000.00
Farm Dairy Butter	21,649,337.00
Condensed Milk	588,000.00
Skim and Butter Milk	10,050,000.00
Fertilizer	20,865,000.00
Total	$105,369,565.49

There are many causes which have contributed to the increase in production and increase in sale value. Our cow testing associations, many of which were organized a few years ago, are now demonstrating their value to the milk producing community by eliminating poor cows and placing the production of milk and cream on a sound business foundation.

Building up our poor and average dairy herds by the introduction of pure bred bulls has rejuvenated the interests of many farmers who were not making money out of their herds until heifers of stronger dairy characteristics because producers.

Numerous other agencies such as the work of the Iowa State College, the State Dairy Expert, and various organizations maintained for the purpose of fostering the dairy industry have contributed their share to the educational work necessary to secure for the producer of milk and cream a fair compensation for the effort expended and money invested.

We believe that we are undergoing a period of awakening as to the possibilities of dairy extension. The few herds being dispersed by our retiring older dairymen are eagerly purchased by the younger men at good prices. This demonstrates two facts: namely, that the younger men have sufficient confidence in the possibilities of dairying to enlarge their herds and that the dairy movement will be continued by the younger men where the older leave off.

Apparent at the State Fair this year was the interest in dairying displayed by many of our farmers who had not entered the field. The demonstration made by the cow testing associations was a center of interest. This exhibit has grown from the insignificant display of a few years ago to one of our principal attractions. At the fair was shown also the largest and best display of dairy cattle in the history of the fair. At the Dairy Cattle Congress held at Waterloo a record breaking attendance was made.

At the National Dairy Show, held this year at Springfield, Mass., an Iowa buttermaker took first prize for the best tub of creamery butter. In this contest buttermakers from 23 principal dairy states competed. We are even more proud of our showing of dairy cattle at this exposition. Iowa herdsmen brought back the first prize for the best herd of 12 Holsteins and the best herd of 12 Guernsey cattle shown by any state. We also brought home a large proportion of the prizes given for individual cattle in the various breeds and classes.

The showing for the year as regards the increased production of dairy products would have been even more remarkable were it not for the protracted hot dry season which affected the central and southern Iowa districts this summer. In these sections production was materially lessened. With the hot dry weather came an increased demand for ice cream, much of the raw material for which had to be secured from the northern section of the state.

Never in the history of the industry has Iowa butter brought so high a price as it did this year. The eastern market which takes about five sixths of our product was uniformly firm. New York quotations averaged for the year 32.43 per pound for extras.

CREAMERY BUTTER.

From reports received from 462 creameries we find that 97,628,788 pounds of creamery butter were manufactured in Iowa last year. This is the highest figure for production recorded during the past eight years. The product brought as returns the sum of $27,127,228.49.

We attribute much of the increase in returns to the marked improvement which is gradually being shown in the quality of butter now being manufactured. Informing the creamery patrons as to better methods of caring for milk and cream is naturely a slower process than teaching better methods of manufacture to the butter maker. As a result our creameries have made more rapid progress due to improved methods of manufacture rather than as a result of securing a better quality of raw product to use. We have confidence, however, in the educational work being carried on with the producers and firmly believe that our creameries will continue to notice a gradually better product being offered to them.

The heavy demand during the summer of the ice cream manufacturers for sweet cream diverted to their use much of the very best raw material for butter making. This situation was felt by the buttermakers during the season.

We find that 462 Iowa creameries secure their raw material from 119,429 patrons who milk 710,714 cows and use 107,853 farm separators. Each of these items shows a marked increase over those of the preceding year; there being an increase of 14 per cent in the number of patrons and an increase of 30 per cent in the number of separators used. There has been an addition of 35,173 cows to Iowa dairy herds devoted to the production of milk and cream for manufacturing butter.

PRICE OF BUTTER.

SHOWING AVERAGE MONTHLY PRICE, IN CENTS AND FRACTIONS THEREOF OF EXTRA CREAMERY BUTTER IN NEW YORK MARKET, THE PAST TWELVE YEARS, EACH YEAR ENDING WITH OCTOBER 1.

Month	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
October	20.95	21.84	26.11	29.15	26.73	30.64	29.96	30.44	31.29	31.46	31.6[illegible]	28.61
November	24.81	23.59	27.62	27.25	29.57	30.95	31.17	33.91	34.46	33.85	34.79	31.10
December	26.88	24.80	31.64	28.87	31.31	34.90	29.66	36.79	37.27	35.12	33.18	35.09
January	29.10	26.50	30.80	30.69	31.52	33.44	26.39	38.10	35.18	32.66	33.50	31.04
February	32.18	27.09	32.54	32.33	30.60	29.61	26.11	31.14	36.39	29.34	32.31	33.86
March	28.07	27.00	30.61	28.40	29.53	32.63	23.91	30.64	36.77	27.74	29.76	36.96
April	30.08	21.88	30.69	28.55	27.08	31.13	21.11	32.37	34.19	25.40	30.77	36.03
May	23.71	20.17	25.01	23.68	26.58	28.43	21.87	30.43	28.61	26.16	28.88	31.08
June	20.49	20.22	23.60	23.29	25.81	27.92	24.99	27.31	27.81	27.22	28.23	29.82
July	20.56	20.62	24.81	22.43	26.23	28.31	25.10	27.13	27.02	27.90	27.02	28.93
August	21.11	22.57	24.88	22.85	27.19	29.38	26.31	26.63	27.98	30.43	25.92	31.20
September	20.68	24.62	27.81	23.88	30.13	29.89	26.55	29.76	31.57	31.43	26.03	33.88
Av. value per lb. per year	24.89	23.40	27.59	27.62	28.48	30.66	26.09	31.21	32.41	29.97	30.29	32.43

TRADE-MARK BUTTER.

The production of butter under the state trade-mark has made as rapid progress as the exacting provisions of the regulations governing the use of the trade-mark have permitted.

The Executive Committee which has charge of the details of putting the trade-mark in effect has been handicapped by the slow progress made with the United States Patent office in completing the details of registering the mark and the many details of a technical character effecting the labeling of the butter.

These matters have now been satisfactorily settled and the trade-mark is now in use by the Alta Vista Farmer's Creamery Association, Alta Vista; Farmers' Creamery Company, Manly; and the Strawberry Point Farmers' Creamery Association, Strawberry Point.

The unprecedented demand for sweet cream during the past summer prevented some of the other creameries who had applied for the use of the mark from meeting the requirements of the regulations. We expect six to eight additional creameries to qualify for the use of the mark next spring.

The demand on the New York market for Iowa trade-marked butter is far in excess of the supply.

CHEESE.

The decreasing imports of cheese from Europe has caused a marked advance in the price of cheese on the markets of the country. Activities of the past few months indicate that a marked increase in production of Iowa cheese is soon to be expected. Plans are now under way for the installation of some six or eight new cheese factories in the northern part of the state. As none of these factories is ready for operation, estimates as to the results which are to be expected would be of no value. The twelve cheese factories of the state produced 681,315 lbs. of cheese during the year valued at $150,000.00.

CONDENSED MILK.

The factories manufacturing condensed milk of which there are three evaporated 17,298,868 pounds of milk. This amount is but a small portion of the total consumption of evaporated milk in Iowa. In fact the entire output of the condenseries would about supply the amount of evaporated milk used by the manufacturers of ice cream in this state during the past year. This would leave the entire demand of evaporated milk used in hotels, restaurants and the home to be supplied by the factories of other states. It will be seen that the number of condensing plants in the state could be materially increased without causing the manufacturers to go elsewhere for a market.

ICE CREAM.

The manufacturers of ice cream have made rapid progress during the year. The season previous was a very unfavorable one for this important industry, but the past summer afforded seasonable conditions leaving little further to be desired.

The state may feel proud of the rapid progress made by many of our ice cream manufacturers as regards the sanitation of their plants and the improved methods instituted for handling both raw and manufactured products.

Our state statutes several years ago defined ice cream and established for it a minimum fat content. This standard has been earnestly complied with by our Iowa manufacturers and has resulted in a standardization of the ice cream business.

The manufacture of ice cream of uniform quality and of definite food value has secured for it the confidence of the consuming public. Ice cream has rightly become a staple article of food for summer consumption both as a toothsome edible and as a substitute for the many less digestible dishes served as a noon lunch or as a part of the regular meal. That the public appreciates this situation is attested by the fact that the history of the ice cream industry is one of ever increasing output.

The production for last year was 5,318,100 gallons. This production which is 2,896,613 gallons greater than the previous year shows a per capita consumption of about 2 1-3 gallons.

Since the copy for this report was turned over to the state printer, the United States Supreme Court has decided the case which originated several years ago relative to the state standard for ice cream.

The decision of the court is to the effect that the General Assembly not only has the right to set standards for food products sold in this state, but that the present state standard of a minimum of 12% of milk fat in ice cream is a fair and just standard. We are glad that this matter has been disposed of, as it has occupied considerable time in the courts and has cost the state and the manufacturers who chose to contest the law, considerable money. I believe that at the time the case occupied the attention of the lower courts that the manufacturers believed they were in the right and that the 12% standard was too high. Since that time, however, they have seen the ice cream industry grow as a result of public confidence in a product of so high a quality as that now manufactured in this state. I believe that none of our manufacturers would now welcome a lower standard.

WORK OF THE IOWA STATE DAIRY ASSOCIATION, 1916

Although dairying has been an important phase of Iowa agriculture since its beginning, it has never until the past few years received that encouragement which has developed other lines of farming. As a consequence, the Iowa farmer and dairyman have been reluctant to accept improved methods of dairy husbandry.

The creamery interests have made much more rapid progress and today are recognized among the most remunerative factories of Iowa. The education of the buttermakers and creamery managers has received much attention and their efficiency as manufacturers of butter is far in advance of the methods used for the production of the raw product on the average farm. Realizing that there was greater strength in co-operation than there was in individual effort, the Iowa State Dairy Association was organized in 1876. This work as in any other line, needed some definite foundation, and as there was no large market for the raw products the creamery was naturally the first to receive the attention of the organizers.

The association gradually grew and acquired prestige until in 1909 it had a membership of over 600 buttermakers, farmers and dairymen. At that time it was realized that in the effort of advancing the manufacture of butter, there was an important phase of dairying which had, to a great extent, been overlooked, and if the dairy industry of Iowa was to continue to advance, the cow, which is the foundation of dairying and the source of raw material, must be given consideration.

In order to render certain and make rapid this improvement, the officers of the association appealed to the state legislature for assistance. As a result a bill was passed by the 33d General Assembly, authorizing an appropriation to carry on dairy educational work. Since that time the appropriation has been voted by each legislature.

Up to the winter of 1915-16, the educational department had operated fifteen dairy trains. These covered every railroad line in the state and furnished the lecturers an opportunity to reach 701 towns, 210 of which were given two or more meetings due to the crossing of the various lines. These special trains were conducted in a manner to create an interest in dairying and prepared the way for more detailed information in the localities visited.

During the year ending November 1, 1916, representatives of the association met 231 audiences in 66 counties. The records of attendance show that 42,900 people were reached. Of the 231 audiences, 42 were in attendance at farmers' institutes, 46 at dairy and creamery meetings, and the remaining 119 at meetings conducted by the dairy association directly.

A special dairy train was operated over the Illinois Central Railroad lines and every town sufficiently interested to assist in making arrangements was included in the itinerary. The equipment of this train included two baggage cars which were used to carry specimens of the leading dairy breeds and exhibits of dairy products, dairy machinery, charts, diagrams, etc. The special equipment as in previous years was furnished by the railroad to the Association without charge.

Half day or full day meetings were held at each town. In addition to the regular lecture work, community dairy shows, boys' and girls' judging contests, milk record contests, etc., were conducted.

THE COMMUNITY DAIRY SHOWS.

The community dairy shows which were established the previous winter were again conducted at every meeting where satisfactory arrangements could be made to secure the animals necessary for the work.

The business men at each town co-operated in making the show a success and offered attractive cash and merchandise prizes for the best animals exhibited. The dairymen and leading farmers in the communities also gave considerable of their time in encouraging their neighbors to exhibit cattle. All breeds of cattle used for milk production, whether grades or pure breds, were entered, which gave an excellent opportunity for comparison of the various types.

The shows were held in a lumber yard or livery stable which afforded the best place obtainable to stable the animals and furnish shelter for the audience as well. The programs were opened by leading the best cows into the ring and using them to demonstrate the essential characteristics of good productive dairy type. Questions were then called for and discussions held in which all were invited to participate.

After the cow demonstration was completed, the ring was made larger or when the weather would permit all of the animals were led into the streets, and the judging of the various classes begun. The animals were then placed by the judge with regard to their dairy qualities after which each was gone over carefully and its desirable and undesirable points explained.

The Community Dairy Shows made it possible to reach the man milking a few cows and point out to him by the use of a member of his own herd the difference between the profitable and the unprofitable cow. It was explained to him on his own basis, and he was encouraged to determine further the real value of his herd by weighing and testing the milk. Considerable friendly rivalry was created among the exhibitors which will undoubtedly lead in many instances to better fed and care in the average herd of milk cows.

SCHOOL PROGRAMS AND CONTESTS.

At all the meetings promoted by the Association itself school programs were held. In many instances the rural schools were dismissed and the students attended the assembly meetings which were held in the largest town school house. At these, general lectures on the importance of agricultural training with special reference to dairying were given.

At the completion of the lectures at the high school, the students accompanied by the instructors, were taken to the barn where the cattle for the community dairy shows were kept, and instruction given in judging. The cow demonstration was given first to explain the characteristics of the correct type of dairy cow. Then the boys and girls were supplied with directions and all required to compare the class of animals brought before them. After inspecting the animals for twenty minutes, the students wrote their placing together with the reasons for same on the direction sheet and these were handed to the lecturer in charge. Discussions were then held and all questions answered.

The business men at the various towns gave prizes for the boys and girls who excelled in judging. The students generally were very much interested in the work and expressed a desire to study their agricultural work in school in a similar way. During the winter of 1915-16 nearly 5,000 boys and girls were reached in this manner.

THE MILK RECORD CONTEST.

In order to interest the boys and girls in dairying and to show the real value of the average dairy herd in a practical way, a Milk Record Contest was organized. Any boy or girl between the ages of 12 and 18 years who could weigh and test the milk from three or more cows for three consecutive months was eligible to enter the contest. The contest proper closed in three months, but the contestants were all encouraged to continue the work for at least one year in order to get the entire lactation period of each cow.

A supply of monthly record sheets, feed standards, and pamphlets containing all of the necessary directions for carrying on the work, was furnished to each contestant. They were required to furnish themselves with scales, and wherever possible, with Babcock testers. In case the tester could not be secured, the contestant was required to have the creamery or station man test the samples for butterfat not less than twice a month. At the end of each month, the records were transferred to a summary sheet and the complete data mailed to the office of the association.

The manner of grading the reports was based upon the efforts put forth by the contestants, and not on the production of the cows. In addition to the reports, an essay of not to exceed 500 words describing the manner in which the work was carried on and the benefit derived therefrom was required from each contestant. Any changes which improved the rations or made the production of milk more economical, were recognized, but it was realized that the contestant had no opportunity to select the cows with which he must work.

The following score was used in grading reports:

Accuracy, 25; number of cows, 15; neatness, 20; completeness of details, 20; essay, 20; perfect score, 100.

The breeders of dairy cattle, the publishers of dairy magazines, and the manufacturers of dairy appliances assisted very materially in making the contest a success by offering valuable and practical prizes for furthering the dairy industry.

The results of the contest are gratifying. There were 172 boys and girls who completed the work. Many of these tested more than the required number of cows, while some tested as high as 19 during the entire contest. The reports show that 692 cows produced an average of 501 pounds of milk and 20.5 pounds of butter-fat per month or 16.7 pounds of milk and .68 pounds of fat per day. The average milking period as tabulated on the reports, is eight and one-half months, which makes an average of 4,258 pounds of milk and 174.2 pounds of butterfat per year. The average cost of feed per month was $4.92 per cow. This included dry feed two months and pasture one month. The cost of producing 100 pounds of milk averaged 98 cents and of producing one pound of butterfat 24 cents.

The average price received for butterfat which was sold for the manufacture of butter was 27 cents per pound. This shows a profit of only 3 cents per pound for the butterfat if the skim-milk and manure are allowed to balance the cost of labor, interest and depreciation. The average price received for butterfat used in ice cream making, was thirty-eight cents which shows the advantage in selling sweet cream for this purpose.

Of the 172 herds in the contest, 41 were receiving silage, 36 alfalfa hay, and only 21 a combination of these two feeds. The amount of cottonseed meal, oil meal and bran fed was small and limited to only a few herds. The principal ration used consisted of corn and oats, mixed hay and corn fodder.

The result of the milk record contest show the conditions as found in the average small herd of milk cows in Iowa. They emphasize the importance of getting the farmer, who milks a few cows, interested in his herd. They also indicate the part these herds play in lowering the production of the Iowa cow.

OTHER WORK.

A service department to assist the man just entering the dairy business to locate and purchase foundation animals for his herd was established January 1, 1916. The object of this department is to bring the man who has dairy cattle for sale in contact with the man who wishes to buy. A large number of farmers have taken advantage of this service and many of them have been enabled to purchase the animals they desired at a much smaller expense than if they had attempted to locate the stock themselves. It has been a means of encouraging the purchase of pure bred dairy sires to head herds of the ordinary type in many sections of the state.

During the spring and fall months when the work is urgent on the farm and it is therefore difficult to hold meetings, bulletins are sent to the local newspapers. These contain timely suggestions which assist the farmer in solving the problems which confront him with reference to his dairy herd. They are written with the idea of assisting the creameries in improving the quality and quantity of raw product. The newspapers are lending their assistance by giving the information a prominent place in their columns.

One of the important features of the work has been the establishment of a Dairy Cattle Congress in conjunction with the annual convention. This year the show was unsurpassed by any similar event. It brings dairy cattle breeders with their choice animals from every part of the United States and offers the farmers of not only Iowa, but the Mississippi Valley an opportunity to become acquainted with the various breeds. Premiums are offered for butter, cheese, and milk, which in addition to the display of dairy appliances and farm implements, bring thousands of prosperous farmers. The convention proper is held in a building on the grounds, the subjects of interest to the buttermakers, creamery men and dairymen are discussed by authorities of national reputation.

The Iowa State Dairy Association in all of its work has been assisted in a large measure by the other dairy interests of the State. Chief among these is the Dairy and Food Department which had a number of speakers on the trains throughout the tours and also co-operated in all of the other work. The individual dairymen have also sacrificed portions of their time to educating their brother farmers in better methods of and giving them the benefit of valuable experience. The Dairy Department of Iowa State College and the State Veterinary Department have also given a great deal of assistance from time to time.

WORK OUTLINED FOR 1916 AND 1917.

The State Dairy and Food Commission and the Iowa State Dairy Association have planned a joint campaign to be conducted in Southern Iowa during the coming winter. This section is greatly in need of more dairying because of the condition of the soil and the relatively low income obtained with the present methods employed. The mild climate, the abundance of grass and the adaptability of the soil for growing milk producing feeds make the natural conditions ideal for the economical production of milk. There are but a few creameries in this portion of the state and therefore the market for dairy products is not as well developed as in the northern portion.

An effort will be made to secure a number of pure bred sires of the different dairy breeds and locate them in various communities. Meetings will be held at the towns and breeders' clubs will be organized. Where sufficient interest is manifested by the farmers a pure bred dairy bull will be given to three or four neighbors for use in their herd. At the expiration of several years the bulls in the different communities will be exchanged and in this way strong healthy herds will be built. It is hoped that this means of actually developing the herd will result in a greater interest in dairying and the increased production of milk and cream in Southern Iowa.

A SIMPLE STEAM STERILIZER FOR FARM DAIRY UTENSILS

The information which follows relative to the manufacture and operation of a simple steam sterilizer for farm and dairy utensils is of sufficient importance to our dairymen and creamerymen to justify publication in this report. This material has been printed in a limited edition by the Bureau of Animal Industry, U. S. Dept. of Agriculture from whom the use of the cuts has been secured.

Cleanliness of dairy utensils is highly essential for the production of a high quality of dairy products, particularly milk and cream. The ordinary process of washing dairy utensils is not sufficient to assure freedom from infection and contamination, therefore sterilization is necessary.

Dairy utensils on small farms are not often efficiently sterilized, because steam is not available. The sterilizers now in use require a small boiler, and the whole sterilizing outfit is often regared as too expensive for use, especially on farms where only a few cows are milked.

The object of this bulletin is to describe a simple and inexpensive yet efficient steam sterilizer which can be provided at a cost of from $5 to $10. It is believed that the sterilizer described here is cheap enough to justify its use on any farm from which milk or cream is sold. The additional keeping quality which the sterilization of utensils will give milk and cream will probably pay for the cost of the sterilizer in one season.

Dirty dairy utensils, and even those which apparently are clean but which have not been sterilized, contain vast numbers of bacteria which are added to milk or cream when it comes into contact with them. These bacteria when introduced into milk begin to grow and produce changes which spoil it. It is true that even when milk is produced under clean conditions it will contain a few bacteria, and when such milk is placed in unsterilized utensils or is run through an unsterilized strainer cloth or separator, large numbers of bacteria are added, which are liable to spoil it quickly.

When dairy utensils are sterilized by steam, all bacteria and disease germs which may be upon them are destroyed and therefore milk and cream when placed in these utensils will keep sweet much longer.

CONSTRUCTION OF THE STERILIZER.

The sterilizer herein described and recommended to the farmer is designed to be of greatest use to those who have one, two or three 10-gallon or smaller cans with a similar number of pails and a strainer cloth. It can be used, however, with a larger number of cans.

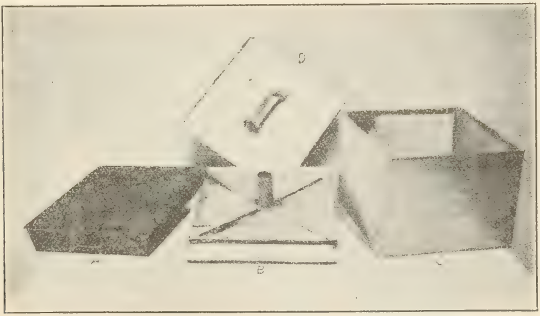


FIG. 1.—Parts of the steam sterilizer. A, roasting pan; B, cover of pan; C, galvanized iron box; D, cover of box.

The sterilizer consists of the parts shown in figure 1. First is a roasting pan (A) of standard size, 20 inches long, 14 inches wide, top measurement, and 3 inches deep. The cover is in three parts; the lower part, fitting closely over the pan, is covered with asbestos, upon which is placed the upper part, the latter being the same width as the pan but 3 inches shorter at each end. It is made as follows: Take a sheet of heavy galvanized iron and cut it large enough to cover the top of the roasting pan, allowing a little to overlap the edge. Solder flanges beneath this cover so that they will meet the edge of the pan, thus making a tight cover. Then cut a hole in the center of the cover 1½ inches in diameter and solder on a round galvanized iron pipe 4½ inches in height and 1½ inches in diameter. The cover should then be insulated by covering with a piece of asbestos board five-sixteenths of an inch thick; a hole should be cut in the center of this piece to allow the steam outlet pipe to pass through. Then for the upper part make a shallow pan of galvanized iron 14 inches square with sides five-eighths of an inch high; cut a hole 1½ inches in diameter and fit the pan on top of the asbestos, allowing the steam outlet pipe to extend through the center hole. When the pan is pressed down closely to the asbestos, solder it to the steam outlet pipe which passes through it. On the pan four strips of stiff galvanized iron three-eighths of an inch wide are soldered. These should extend three-eighths of an inch above the bottom of the pan, as shown in figure 1, and should run from a distance of 1 inch from the corners to 1 inch from the steam outlet in the center. A section through the cover (B) is shown in figure 2, In case asbestos can not be obtained, paper may be used instead. Pack papers tightly to a height of three-eighths of an inch over galvanized iron cover with another iron sheet, soldering all edges together to make absolutely tight seams. This will form an insulated cover three-eighths of an inch thick which will replace the asbestos. A cross section through this type of cover is shown in figure 3. The construction is very similar to that shown in figure 2.

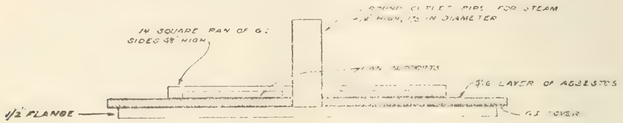


FIG. 2. Section through cover of roasting pan.

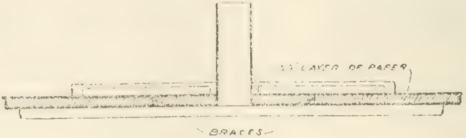


FIG. 3.—Section through galvanized-iron cover, showing paper insulation.

The rest of the sterilizer, seen in figure 1, consists of a galvanized-iron box (C) with a removable cover (D) which has a handle on the top. This box has no bottom, the 14-inch shallow pan on the asbestos over the cover of the roasting pan forming the base of the box. The sides should be made separate and should be 11 inches high. These sides should fit tightly into the shallow pan just mentioned. On one side of the box at the top a wire should be attached three-fourths on an inch from the top and one-half inch from the side. This is shown in figure 1, where a strainer cloth may be seen hanging. The cover of the box (D) should be made large enough to extend over the sides and fit closely.

SOURCE OF HEAT.

In the department's test of the outfit described a two-burner wickless kerosene stove was used with excellent results. To get the full heating effect, however, it was found necessary to raise the burners until their extreme top was within seven-eighths of an inch from the bottom of the pan, which should rest on the stove grating. This change should be made in case it is found impossible to raise the steam to a temperature of 210° to 211° F., as the best results are

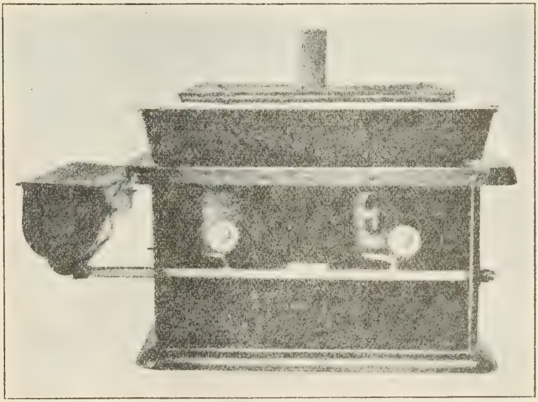


FIG. 4.—Sterilizer in position on oil stove to sterilize cans and pails.

obtained with steam at that temperature. The burners can be raised easily at little expense.

The sterilizer, however, may be placed on the kitchen stove or over any other source of heat, such as a gas, gasoline, or laundry stove which burns either wood or coal. It is necessary, however, to have sufficient heat to furnish steam at the end of the outlet pipe at least 205° F., and 210° to 211° F. should be obtained if possible.

COST OF STERILIZER.

The cost of the sterilizer itself should not be more than $5. The roasting pan varies in price from 25 cents to $1, depending on the grade of iron. The galvanized iron, with asbestos and construction work, should not cost more than $4, and the work can be done by

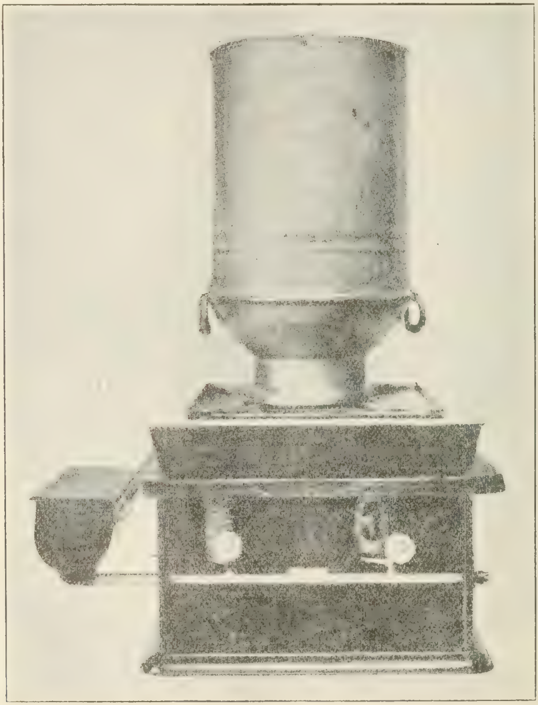


FIG. 5. Can in position for sterilization.

any tinner. A two-burner wickless kerosene stove costs from $3.50 to $4.50 but in many cases it will not be necessary to purchase a stove.

METHOD OF OPERATING THE STERILIZER.

TO STERILIZE CANS.

Fill the roasting pan with water to a depth of 1 inch. Fit the cover on the pan and place on a two-burner kerosene stove, as shown in figure 4. As soon as the water heats sufficiently, steam will come from the outlet pipe. The temperature of the steam at its first ap-

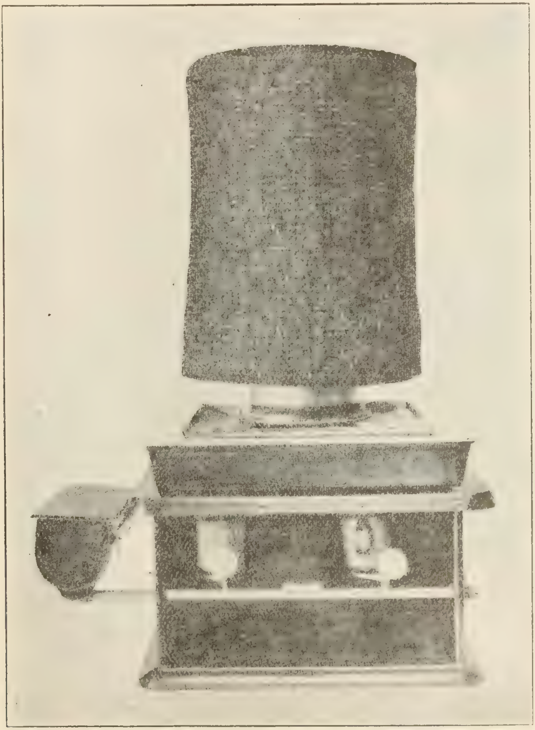


FIG. 6.—A form of insulatng cover for cans.

pearance is about 140° F. Continue the heating until the temperature of the steam at the end of the outlet pipe is at least 205° F.; this should be determined by a thermometer. When the steam has reached this temperature, place the can inverted over the steam outlet, as shown in figure 5, for five minutes, then remove, shake out any water, and place upright on the floor. The can should be absolutely dry in one or two minutes. If not dry in that time it shows that the steam was not 205° F. or above, or that the can had not been washed clean. On account of being so highly heated by the steam the can should dry almost immediately.

In figure 6 an insulating cover is shown over the can. A similar cover can be made cheaply from a blanket, and its use is urged, especially in cold rooms, since otherwise the can may be cooled so quickly that it will not dry thoroughly.

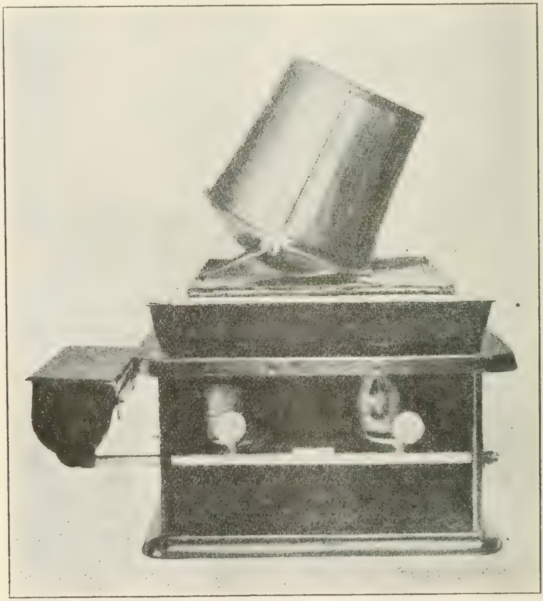


FIG. 7.—Milk pail in position for sterilization.

TO STERILIZE PAILS.

See that the steam is at a temperature of 205° F. or above, then place the pail inverted over the steam outlet, as shown in figure 7. Allow it to remain five minutes, then remove, shake out the water resulting from the condensed steam, and set upright on the floor. The pails do not dry so quickly as the cans, but they will be absolutely dry within a few minutes. An insulating woolen cover is also recommended for use in a cold room. After the pails have been steamed and are dry, place them upright in a clean, dry, covered wooden or metal box until milking time.

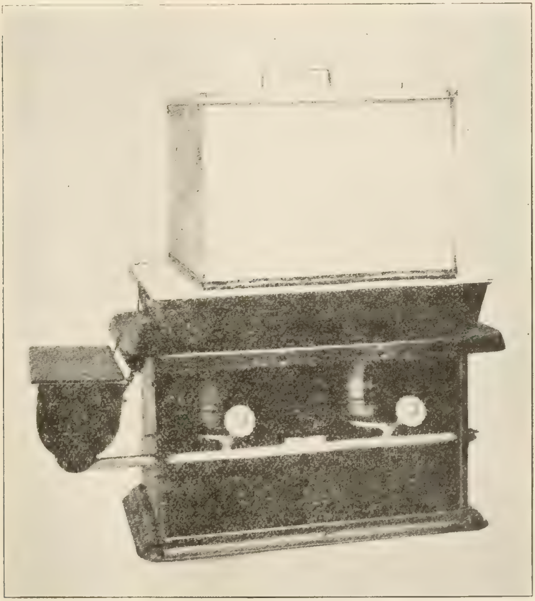


FIG. 8.—Box in position for sterilizing can covers and strainer cloth.

TO STERILIZE CAN COVERS AND STRAINER CLOTHS.

Use the box shown in figure 1. Before placing it in position, hang the strainer cloth on the wire at top of box, as shown in the figure, having the cloth so folded that one edge may be easily reached without handling the entire cloth. Have the steam at 205° F. or above, and place the box in position as shown in figure 8, leaving the cover off. Set the can covers upright along the sides of the box inside, with the tops of the covers against the sides of the box. As one side is covered by the strainer cloth there is space against the other three sides, giving room for at least three can covers. Place the cover on the box and steam for five minutes. Then remove the cover and take out the can covers, handling only the top edge. Shake out any water collected in the covers and place them, top down, on a table. It is important to observe this, so that the inside of the cover is uppermost. These covers will dry within two or three minutes, after which they should be placed tightly on the dry cans. Handle only the edge of the cover which remains outside of the can. The strainer cloth should remain hanging in place with the cover on the box until it is to be used at milking time.

TO STERILIZE SEPARATOR PARTS.

The milk-receiving tank of the separator, the same as a milk pail, should be steamed five minutes while inverted over the steam outlet pipe. For other separator parts, use the box the same as for can covers. Wash the parts thoroughly and when the temperature of the steam is 205° F. or above, place the box in position as shown in figure 7. Place the separator parts in the box and put cover on. Allow to remain for five minutes. If the parts are too large for the box, a special case should be constructed. After steaming, keep the tank and separator parts in a clean place free from dust.

COST OF OPERATION.

The cost of operation for the sterilization of two 10-gallon cans, with tops, two pails, and strainer cloth, using kerosene at 10 cents a gallon will be about eight-tenths of a cent. This cost is based on the following figures: Each burner consumes one-half pint of oil an hour, making a total of 1 pint of kerosene, which at 10 cents a gallon amounts to 1¼ cents for fuel per hour. Starting with water at a temperature of 60° F. and with the water 1 inch deep in the roasting pan, about 12 minutes is required to heat the water and generate steam at a temperature of 205° F. Five minutes is then required for each can, the same for each pail, and the same for covers and the strainer cloths. Thus the 2 cans require 10 minutes, the 2 pails the same, and the covers and strainer 5 minutes, making a total of 25 minutes, which added to the 12 minutes required to generate steam, makes a total of 37 minutes for the operation. In this operation no time has been allowed for changing utensils. Two minutes should be sufficient for these changes. To sterilize three cans with covers and strainers would therefore cost about 1 cent. When the sterilizer is used on the kitchen stove the cost should, of course, be very much less, if the stove were already in daily use.

RESULTS OBTAINED BY STERILIZATION.

When properly operated this sterilizer destroys practically all the bacteria in the utensils, including all disease germs which may be present. It will accomplish the same results as any sterilizer in which steam not under pressure is used. Experiments with this sterilizer show that the 5-minute steaming is, for practical purposes, as good as the 15 to 30-minute steaming usually recommended.

POINTS TO REMEMBER.

1. Rinse utensils in cold water, then wash thoroughly with hot water and washing powder. Utensils must be washed clean before sterilization. Sterilization is not a substitute for washing.

2. One inch of water in the roasting pan will furnish steam at a temperature of 211° F. for about 50 minutes. If the sterilizer is operated for a longer period, water should be added to make up for loss by evaporation.

3. The temperature of the steam as it comes from the outlet pipe must be at least 205° F. and preferably 210° to 211° F.

4. Cans, pails, covers and strainer cloths must be steamed for a full 5-minute period. Longer steaming will do no harm, but is not necessary. The 5-minute period must be reckoned from the time the can is placed inverted over the steam outlet, and the steam must be at least 205° F. when the can is placed in position.

5. An accurate thermometer, with a scale reading to 212° F., is necessary to determine the temperature.

6. When a can or pail is placed over the steam outlet its top should rest on the four raised metal supports in order to keep it three-eighths of an inch above the surface of the pan. This is necessary to prevent the water from the condensed steam from sealing the opening below the can or pail. If this space is filled with water, steam will not enter the can.

7. No arrangement is provided for the water from condensed steam to run back into the roasting pan. This can be arranged if found desirable. When only a few utensils are to be sterilized the water can be soaked up with a towel if the quantity has become too great, or the whole cover may be lifted and the water allowed to run off.

8. Some form of insulation is recommended for use over utensils which are being sterilized in a cold room. A blanket easily can be made for this purpose. This is desirable in order to keep the cans or pails hot long enough after the sterilization to dry out quickly.

9. Cans should be dry in one or two minutes after removal when placed upright. If they do not dry within that time, they have not been sufficiently heated or were not washed clean.

10. The drying of dairy utensils after washing and sterilization is extremely important, for bacteria may develop in a moist can.

11. After the utensils are sterilized and dried, they should be placed in a room free form dust and should not be touched until milk is placed in them. Pails after steaming and drying should be placed upright in a clean, dry, covered wooden or metal box, where they should remain until milking time.

12. The sterilizer has been designed with the intent of making it both cheap and simple, to give the desired results. Satisfactory results should follow its use.

13. When using a kerosene or gasoline stove the sterilizing should be done in a room where milk is not handled, as the milk may absorb the odor of the oil.

14. The sterilizer may be used advantageously for separator parts, which should be steamed in the box used for can tops. In case they do not fit, a special metal box should be made.

15. After use, the parts of the sterilizer, especially the roasting pan and cover, should be cleaned and wiped dry, to prevent rusting.

16. The sterilization of dairy utensils is a matter of very great importance, and producers are urged, for their own advantage, to prevent the introduction of vast numbers of bacteria into their milk from unsterilized utensils which may look clean to the eye. Under ordinary circumstances macteria grow rapidly in milk and spoil it, thereby causing losses to the producer and others.

CITY MILK LICENSES.

Table showing the number of milk licenses issued to city milk dealers for each year from 1908 to 1916. In each case the year ends on July 4th.

Year	1908	1909	1910	1911	1912	1913	1914	1915	1916
Number	1,078	1,149	1,106	1,310	1,908	2,038	2,189	2,365	2,729

LOCAL STATE MILK INSPECTORS OF THE STATE OF IOWA.

Cities	Inspectors
Boone	Maurice Healey, M. D.
Burlington	W. F. Schroeder
Cedar Rapids	Phillip Pray
Council Bluffs	F. F. Miller, D. V. S.
Davenport	H. J. High
Des Moines	W. B. Barney, Jr.
Clinton	J. H. Spence, D. V. S.
Dubuque	F. J. Kennedy, D. V. S.
Ft. Dodge	Francis Ludgate, M. D.
Iowa City	C. S. Chase, M. D.
Keokuk	W. P. Sherlock, M. D.
Marshalltown	J. A. Jensen
Mason City	A. L. Wheeler, M. D.
Muscatine	Dr. C. J. Hackett, D. V. S
Ottumwa	B. W. Van Der Veer
Sioux City	W. D. Hayes
Waterloo	N. A. Talty, Ph. C.
Oskaloosa	B. E. Roberts

CREAMERY BUSINESS OF IOWA.

SHOWING POUNDS OF MILK AND CREAM RECEIVED, POUNDS OF BUTTER MADE AND DISPOSITION OF SAME, SO FAR AS REPORTED.

Counties	No report	Pounds of milk received	Pounds of cream received	Pounds of butter manufactured	Pounds sold to patrons	Pounds sold outside the state	Pounds sold in Iowa
Adair	------	214,039	1,840,214	735,311	36,319	634,444	64,548
Adams	1	------------	272,600	107,160	7,314	85,515	14,331
Allamakee	8	------------	6,720,014	2,099,394	55,654	1,864,015	179,725
Appanoose	1	------------	------------	------------	----------	------------	----------
Audubon	8	69,083	2,825,827	1,130,376	72,368	1,016,002	42,006
Benton	6	1,957,187	1,033,036	362,414	12,350	223,110	126,954
Black Hawk	12	23,145,395	2,909,632	1,844,431	144,981	1,246,610	452,840
Boone	3	------------	776,489	295,729	13,274	102,921	179,534
Bremer	24	55,795,848	1,035,355	2,782,796	241,351	2,408,115	133,330
Buchanan	8	14,294,628	7,151,392	1,560,668	111,514	1,294,554	154,600
Buena Vista	6	149,148	2,073,150	689,802	40,331	575,776	73,695
Butler	11	8,644,527	2,903,698	1,370,716	94,931	1,189,827	85,958
Calhoun	4	49,503	1,048,166	488,018	27,126	430,927	29,965
Carroll	8	234,694	1,944,475	814,085	35,045	530,675	248,365
Cass	2	------------	1,472,784	554,909	861	468,595	85,453
Cedar	5	------------	2,764,548	933,540	40,416	592,058	301,066
Cerro Gordo	9	1,117,277	6,596,465	2,063,211	66,947	1,768,486	227,778
Cherokee	1	------------	121,928	37,982	200	33,388	4,394
Chickasaw	11	9,411,541	6,402,779	2,189,043	178,224	1,895,991	114,828
Clarke	------	------------	------------	------------	----------	------------	----------
Clay	7	99,500	1,715,776	616,426	46,457	543,470	26,499
Clayton	14	17,929,264	7,728,259	3,006,669	122,077	2,797,962	86,630
Clinton	6	123,500	3,615,427	1,223,469	19,350	1,058,188	145,931
Crawford	1	33,062	131,515	38,152	3,632	32,567	1,953
Dallas	2	155,280	540,700	210,613	7,954	76,209	126,450
Davis	------	------------	------------	------------	----------	------------	----------
Decatur	------	------------	------------	------------	----------	------------	----------
Delaware	14	18,014,639	7,997,914	2,626,153	180,591	2,151,859	293,703
Des Moines	------	------------	------------	------------	----------	------------	----------
Dickinson	4	------------	2,387,707	815,046	17,129	651,913	146,004
Dubuque	14	2,672,082	8,867,518	3,096,572	86,612	2,469,497	540,463
Emmet	3	------------	1,151,963	339,091	22,713	299,120	17,258
Fayette	21	30,733,088	7,905,242	3,593,324	262,304	3,017,529	313,491
Floyd	4	54,751	2,188,749	629,905	58,265	492,959	78,681
Franklin	7	12,293	23,294,064	1,122,076	50,454	968,309	103,313
Fremont	------	------------	------------	------------	----------	------------	----------
Greene	2	137,173	394,484	161,796	10,659	92,739	58,398
Grundy	6	658,031	2,515,786	784,554	46,562	726,408	11,584
Guthrie	5	54,367	1,717,511	619,234	28,393	493,579	97,262
Hamilton	5	32,620	984,110	309,916	28,704	244,947	36,265
Hancock	8	69,570	4,105,569	1,255,893	70,512	1,118,646	66,735
Hardin	9	408,748	6,073,461	1,823,976	93,198	1,534,208	196,570
Harrison	1	------------	160,000	43,500	500	40,000	3,000
Henry	------	------------	------------	------------	----------	------------	----------
Howard	9	486,328	6,286,828	1,834,414	55,857	1,641,574	136,983
Humboldt	6	198,915	2,389,511	800,833	32,686	723,376	44,771
Ida	1	------------	380,404	97,601	1,000	66,601	30,000
Iowa	------	------------	------------	------------	----------	------------	----------
Jackson	8	189,795	4,753,264	1,591,221	38,375	1,452,259	100,587
Jasper	2	------------	750,833	201,267	8,756	129,107	63,404
Jefferson	------	------------	------------	------------	----------	------------	----------
Johnson	1	------------	537,206	175,934	----------	115,934	60,000
Jones	8	1,544,677	7,982,504	2,536,340	121,598	2,281,814	132,928
Keokuk	2	42,289	732,283	264,074	2,000	202,074	60,000

CREAMERY BUSINESS OF IOWA—CONTINUED.

Counties	No report	Pounds of milk received	Pounds of cream received	Pounds of butter manufactured	Pounds sold to patrons	Pounds sold outside the state	Pounds sold in Iowa
Kossuth	16	252,481	5,290,724	1,657,583	155,004	1,358,361	144,218
Lee	1	21,730	2,810,468	927,617	----------	899,686	27,931
Linn	7	775,595	6,082,462	2,079,581	61,616	1,731,368	286,597
Louisa	------	----------	----------	----------	----------	----------	----------
Lucas	1	----------	192,160	53,040	----------	7,000	46,040
Lyon	3	30,000	2,464,688	722,886	1,623	705,492	15,771
Madison	------	----------	----------	----------	----------	----------	----------
Mahaska	1	----------	524,634	150,945	----------	150,945	----------
Marion	2	77,216	212,106	102,307	6,124	87,491	8,692
Marshall	3	141,474	2,189,799	812,337	26,849	567,290	218,198
Mills	1	----------	169,256	52,314	1,140	21,174	30,000
Mitchell	9	469,811	6,051,597	1,509,997	97,779	1,328,134	84,084
Monona	1	----------	63,177	12,288	403	11,335	550
Monroe	1	----------	258,570	86,880	580	17,300	69,000
Montgomery	1	301,600	394,600	174,115	----------	100,800	73,315
Muscatine	1	----------	319,900	85,852	1,501	66,848	17,503
O'Brien	5	196,642	2,165,986	760,806	34,414	599,119	127,273
Osceola	4	74,178	1,364,562	405,223	10,205	346,419	48,599
Page	1	----------	1,474,199	593,164	----------	521,224	71,940
Palo Alto	11	2,133,366	4,307,629	1,424,287	160,695	1,152,721	110,871
Plymouth	2	250,000	709,078	235,693	5,110	102,374	128,209
Pocahontas	3	----------	664,741	223,089	8,342	180,459	34,288
Polk	4	----------	17,519,464	5,535,717	----------	2,520,109	3,015,608
Pottawattamie	1	----------	4,693,768	1,184,442	----------	982,061	202,381
Poweshiek	2	213,120	1,486,238	479,913	3,250	404,988	71,675
Ringgold	1	11,980	180,539	50,674	310	27,847	22,517
Sac	4	----------	683,875	301,015	15,116	233,228	52,671
Scott	3	----------	2,121,172	595,503	250	309,925	285,328
Shelby	3	----------	444,270	178,158	13,301	162,666	2,191
Sioux	8	504,836	5,981,335	1,960,655	33,908	1,833,784	92,963
Story	8	287,254	2,286,763	810,388	93,194	573,120	144,074
Tama	4	----------	1,637,214	563,595	2,310	430,003	131,282
Taylor	1	----------	3,007,644	701,911	16,200	630,711	55,000
Union	2	432,868	2,963,880	936,208	3,848	864,132	68,228
Van Buren	1	----------	263,140	98,215	3,500	86,215	8,500
Wapello	3	----------	6,508,933	1,948,551	7,622	1,754,984	185,945
Warren	------	----------	----------	----------	----------	----------	----------
Washington	------	----------	----------	----------	----------	----------	----------
Wayne	2	20,000	2,391,000	779,829	4,053	705,652	70,124
Webster	4	24,000	1,404,023	502,261	2,700	192,703	306,858
Winnebago	8	2,030,856	4,335,724	1,518,176	131,404	1,303,157	83,615
Winneshiek	9	----------	17,676,432	2,491,475	43,120	2,293,763	154,592
Woodbury	3	2,228,162	31,750,093	12,889,266	1,200	12,360,583	527,483
Worth	8	10,959	4,507,017	1,228,436	78,819	1,087,900	61,717
Wright	5	83,032	1,522,180	478,139	29,425	339,742	108,972
Total	462	199,364,002	309,719,991	97,628,788	3,688,898	81,188,905	12,750,985

HAND SEPARATORS IN IOWA.

SHOWING NUMBER OF CREAMERIES REPORTING USE OF HAND SEPARATORS, NUMBER SO REPORTED, NUMBER OF CREAMERY PATRONS AND NUMBER OF COWS.

Counties	Received cream by rail	Number of creameries reporting hand separators	Hand separators reported	Number of patrons reported	Number of cows reported
Adair	------	2	782	785	4,050
Adams	------	1	180	188	840
Allamakee	1	8	1,721	1,750	13,102
Appanoose	------	--------	--------	--------	--------
Audubon	------	8	1,178	1,181	7,477
Benton	------	4	502	639	3,227
Black Hawk	1	9	623	1,302	10,392
Boone	1	3	390	405	2,130
Bremer	------	7	269	1,841	17,554
Buchanan	------	5	761	1,768	11,422
Buena Vista	------	6	1,011	1,046	5,365
Butler	------	10	1,029	1,495	9,913
Calhoun	------	4	724	729	3,640
Carroll	1	8	1,324	1,380	9,310
Cass	------	2	682	702	4,150
Cedar	1	5	1,586	1,649	7,649
Cerro Gordo	1	8	2,322	2,367	14,822
Cherokee	------	1	100	100	380
Chickasaw	------	9	1,651	1,976	17,329
Clarke	------	--------	--------	--------	--------
Clay		7	612	638	4,240
Clayton	------	12	1,754	2,215	16,268
Clinton	1	5	1,795	2,005	9,940
Crawford	1	1	60	65	260
Dallas	1	2	250	268	1,400
Davis	------	--------	--------	--------	--------
Decatur	------	--------	--------	--------	--------
Delaware	------	12	1,295	1,866	15,818
Des Moines	------	--------	--------	--------	--------
Dickinson	1	4	1,220	1,259	7,240
Dubuque	3	14	2,999	3,163	23,361
Emmet	------	3	311	311	2,150
Fayette	------	15	1,928	2,917	21,821
Floyd	------	4	715	927	5,570
Franklin	------	8	1,092	1,232	7,740
Fremont	------	--------	--------	--------	--------
Greene	1	2	300	303	1,350
Grundy	------	5	583	598	5,184
Guthrie	------	5	699	706	3,862
Hamilton	------	5	541	613	3,230
Hancock	1	7	1.158	1.158	9,473
Hardin	1	9	2,046	2,178	13,152
Harrison	------	1	60	63	320
Henry	------	--------	--------	--------	--------
Howard	------	9	1,528	1.627	8,918
Humboldt	1	6	1,621	1,637	7,100
Ida	------	1	225	225	950
Iowa	------	6	552	545	3,351
Jackson	1	8	1,566	1,609	12,277
Jasper	------	2	360	360	1,800
Jefferson	------	--------	--------	--------	--------
Johnson	1	1	250	250	1,200
Jones	------	7	1,848	2,017	17,415

HAND SEPARATORS IN IOWA—CONTINUED.

Counties	Received cream by rail	Number of creameries reporting hand separators	Hand separators reported	Number of patrons reported	Number of cows reported
Keokuk	2	1	90	350	1,800
Kossuth	------	15	1,437	1,426	11,981
Lee	------	1	1,600	1,625	7,200
Linn	1	7	3,749	3,888	17,752
Louisa	------	------	------	------	------
Lucas	1	1	80	80	460
Lyon	1	3	1,053	1,085	5,707
Madison	------	------	------	------	------
Mahaska	------	1	250	260	1,350
Marion	------	1	150	467	1,030
Marshall	------	3	840	878	5,210
Mills	------	1	95	100	420
Mitchell	------	8	1,182	1,582	10,730
Monona	------	1	20	20	120
Monroe	------	1	140	140	720
Montgomery	------	1	175	180	1,050
Muscatine	------	1	125	171	810
O'Brien	------	5	916	932	5,650
Osceola	------	3	350	357	1,242
Page	1	1	1,450	1,500	4,800
Palo Alto	------	9	1,045	1,242	8,302
Plymouth	1	2	350	356	1,800
Pocahontas	------	3	445	445	1,890
Polk	4	4	9,000	9,150	45,883
Pottawattamie	1	1	2,500	2,500	7,580
Poweshiek	1	2	812	862	1,200
Ringgold	------	1	60	68	396
Sac	1	4	520	525	2,625
Scott	2	2	980	1,040	5,260
Shelby	------	2	229	229	1,195
Sioux	------	8	2,119	2,139	12,313
Story	------	8	1,026	1,026	5,903
Tama	2	1	70	600	2,500
Taylor	------	1	1,500	1,615	5,280
Union	1	2	1,618	1,725	9,340
Van Buren	------	1	175	175	800
Wapello	------	1	3,130	3,205	18,500
Warren	------	------	------	------	------
Washington	------	------	------	------	------
Wayne	1	2	770	950	6,775
Webster	1	4	770	803	4,295
Winnebago	------	8	1,329	1,401	10,562
Winneshiek	------	9	1,970	2,171	17,370
Woodbury	3	3	17,950	18,480	101,250
Worth	------	8	983	1,018	8,788
Wright	------	5	597	604	4,733
Total	43	407	107,853	119,428	710,714

PART VI

IOWA STATE DAIRY ASSOCIATION

Proceedings of the Fortieth Annual Convention, Held at Waterloo, October 4-5, 1916

The fortieth annual convention of the Iowa State Dairy Association, held in connection with the Waterloo Dairy Congress, convened at 10 A. M. Wednesday, October 4th. The meeting was called to order by President W. B. Quarton. After a few preliminary remarks he introduced Mayor Law of Waterloo, who delivered the address of welcome.

ADDRESS OF WELCOME.

BY MR. LAW.

Mr. Chairman and visiting friends of the Iowa State Dairy Association: It is a matter of real pleasure for me to have the opportunity of being present and extending to you, on behalf of the people of Waterloo, the welcome which they have for you. Personally, I cannot understand why a formal address of welcome should be given. You, no doubt, have heard of Eugene Field's experience with the burglar. If you have not, it runs something like this:

Eugene Field was awakened one night by his wife with the statement that there was a burglar in the house down stairs. Apparently, Eugene did not pay enough attention to it for, with the same persistency with which the average wife is gifted, Mrs. Field asked him if he was not going down stairs, to which Eugene replied that he was not. Mrs. Field then asked him why not, to which Field replied that if there was a burglar down stairs he did not want to go and if there was not a burglar down stairs there was no need of his going.

A formal address of welcome has always seemed to me to be something like Eugene Field's attitude, viz.: That if the people of Waterloo were not ready to extend a welcome following this formal address of mine, I would not want to deliver it, and if they are to extend a cordial welcome, then there is no need of my delivering it. In other words, I might stand here for hours and deliver all that I have in my system, and I might talk to you until you were exhausted with listening, of the greatness of Waterloo and of the hospitality of its people and if you were to go from here and find that what I had told you was not in keeping with the facts and that the people were not cordial and hospitable, you would feel that all that I had to say was ill-timed and untrue. I think you understand what I mean, but I want to give you another illustration. I have attended conventions in other cities and have listened to some of the most appropriate and beautifully worded addresses of welcome delivered by someone representing the community and have received nothing more. Again, I have attended conventions where the formal welcome was of small moment and the generosity, the hospitality, and the good fellowship of the people of the community was such that I came away with a warm spot in my heart for my hosts. However, it is a custom that formal words of welcome be given, and I am pleased to have this opportunity of performing the functions and of doing the extending this morning.

In the first instance, I am glad to welcome you because I know Waterloo and I know that all that I may say to you will be backed up by the people of Waterloo. The people of Waterloo are proud of Waterloo and of the things within it, and are proud to show it to others. You know it is a human characteristic to take pleasure in showing things that you are proud of, to people. Consequently, there is a reason for the hospitality of the people of Waterloo, even were it not for the character of the group which has come. I used to think that the people of Waterloo talked Waterloo too much but I have come to the conclusion that they do not, because I have come to the conclusion that a person should talk his own town, he should talk his own state, he should talk his own country, his own business, if he likes it, and if he does not like it, he should investigate the cause. If it is the community in which he lives that is wrong, let him improve the community if he can and if not, let him move to one that he does like.

Waterloo, as you know, is a city which has grown rapidly during the past twenty years. In 1895 we had a population of some 8,000 people. In 1900 the number had increased to more than 12,000. In 1905 it had risen to 18,000. In 1910, 26,000 people were residing within our gates and in 1915 better than 34,000 people were making their homes among us. We are a manufacturing city, engaged, as you perhaps know, in the manufacture of many and various products, chief of which is the cream separator, the gasoline engine, and the manure spreader. We have large jobbing interests, and our manufactured goods go to all parts of the world.

In addition to the Industrial Waterloo, there is the other side, which is equally interesting. For instance, Waterloo has a beautiful river which has caused us to have two of the best sides of the same river that you will find in any community in the state, and, while this should not be an occasion for warning, I would suggest that you all use care in expressing an opinion as to which side of the river you like the best on the wrong side.

We have thirty churches and two well-built, sanitary jails. We have four of the best wells in the country and it is said by those who use the fluid that it is a particularly good quality of water.

Waterloo has some of the most beautiful women in the world and some of the homeliest men out of captivity. She has some seventy miles of paved streets (sixty-five miles of which is asphalt), and she has a few roads that no Waterloo-loving citizen would take you over because of their condition. But after all, in the main, Waterloo is an Iowa city. Her industries and her people are not so much different from the people and the industries of the state of Iowa and the Mid West. The one thing which is distinctive and which causes me to know that they have an especial feeling of friendliness for you, the Iowa State Dairy Association, is the fact that they have the Dairy Cattle Congress and because they realize that it was born of a desire for better things. Its mother was the dairy industry of the country, which you gentlemen and the people of Waterloo have both been charged with being its father. Whichever is the truth, however, the child is well-born and it is an institution which right now, when taking into consideration the work your association is doing, is doing more, in my judgment, for the permanent agricultural development and improvement of this state than any other single movement. I realize that this is a broad statement, but I say it advisedly.

And so we are especially glad that you gentlemen are here. The people of Waterloo and yourselves are in a sort of a partnership in this Cattle Show and, speaking for ourselves, we like the arrangement. We appreciate your coming and we hope that you will enjoy yourselves while here. I am not going to give you the keys of the city because we never had any. The town has been unlocked for years and the doors swing in. We have tried to provide entertainment for our guests of the week and we want you to share in the festivities. I do not anticipate that you will have any difficulty in the city. I never yet have seen milk that was strong enough to cause a man to do anything that he would be sorry for, but whether or not it has that effect, I want you to know that you are free to drink as much of it as you can, to go as far as you like, and that the freedom of the city is yours. I haven't the slightest idea that you will be molested, but in case any of you should be interfered with by these distinguished gentlemen on the streets with blue coats, stars, helmets and clubs, refer the matter to me. I say I do not believe that you will be molested, but if you should and will advise me, I shall be very glad, in my dual capacity as Attorney at Law and Mayor of the City of Waterloo, to see that you are legally convicted and that it will not cost you a cent to have it done.

Again, gentlemen, I welcome you.

RESPONSE.

BY MR. McMURRAY, PRESIDENT OF THE IOWA BUTTERMAKERS' ASSOCIATION.

Members of the Iowa State Dairy Association: Sometime ago, in looking over a Waterloo paper, I noticed a copy of the program to be given at this convention and I also noticed that on that program was my name; I am still wondering who was responsible for it being there. I haven't found him. But a few days ago I also noticed in another copy of the same paper an account which told of a Methodist Conference being in session here and on down the line was an account of a talk given by a noted minister or bishop, highly connected with the church, to a group of young preachers. The account went on to say that the principal topic of his address was devoted to the advice that "having something to say, say it and then sit down." I have been wondering since how to apply this advice to my own case at the convention in view of the fact that I have nothing much to say.

I feel, in fact, a great deal like the Mayor in that a response seems hardly necessary for I believe that Waterloo knows the members of this association appreciate and greatly value their welcome and feel grateful to them for their courtesy. The fact that we have continued to come for the last six or seven years should be ample proof that we think a whole lot of them and of the city of Waterloo.

I don't know of anything that I could say which would be of interest to Waterloo, but I might say to the members of the association, especially to the younger ones, something of the reasons why Waterloo came into possession of this convention, in connection with the Dairy Cattle Congress. Going back over the history of the association for the past six or seven years to the Cedar Rapids convention, you will find that we never had a strictly dairy show in the state of Iowa previous to that time. Just prior to that convention I believe Mr. Barney suggested that we hold an exhibit of dairy cattle at the time of the convention to stir more interest in the convention. Mr. Barney brought some of his Holsteins, some others sent a few Guernseys and Jerseys and that constituted the first exhibit. This exhibit, held in the coliseum, created an interest at the convention and at once aroused breeders to the advantages of having a real dairy show in Iowa. It happened that at this convention some Des Moines representatives put the proposition before the convention to bring the next show to Des Moines saying that they would furnish the coliseum there and give any other assistance which might be required. This offer was favorably received but later when arrangements to hold the show there were taken up it was found that the coliseum had been rented for the same dates upon which the show was to be held and the Des Moines men didn't appear willing to put this other party out; neither did they seem willing to furnish any other place, much to the disgust of those in charge of the convention.

It happened, however, that at this meeting were several citizens of Waterloo, among them being Mr. Marsh and Mr. Shoemaker. When they saw how the show was faring and that things were not going well with it Mr. Marsh suggested to Mr. Shoemaker that they bring it to Waterloo. After talking the matter over they decided to try it. They got up before the convention and put the proposition before them to bring the show to Waterloo. They pointed out that they had the biggest coliseum in the state and Chautauqua Park in which to hold it. The men in charge of the convention were favorably inclined and so the show was brought here to Waterloo. Mr. Marsh was forced to leave on business for another part of the state and it was up to Mr. Shoemaker to get here and rent land for holding the show.

This was the start of the Dairy Cattle Congress and it has been growing ever since until now it is known everywhere. However, this brings us down to the present and its present history you know.

Again, in behalf of the association, I thank the Mayor and people of Waterloo for their cordial welcome.

The President: The report of the secretary and the report of the treasurer will be made tomorrow. I take great pleasure in introducing to you at this time Professor Lee.

THE BUTTERMAKER OF TOMORROW.

BY C. E. LEE ASSISTANT COMMISSIONER AND DAIRY SPECIALIST, WISCONSIN FOOD AND DAIRY COMMISSION.

Never before has there been such a demand for trained creamerymen, operators and makers as at the present time. This is not due to an increase in the numbers of creameries alone, but to the necessity of the smaller creameries, be they co-operative or individually owned, adopting methods that will make it possible for them to compete with those institutions which for years recognized efficiency in every phase of their activity. Only a few months ago, one of the large creamery companies picked a University man at a handsome salary in order that the value of their efficiency department might be increased. The managers and officers of the leading co-operative creameries are beginning to ask the question: "Are we doing our duty to the farmers of the community who entrust us to handle twenty to thirty million dollars a year?" During the past summer two factories with a combined output of over 1,000,000 pounds of butter realized that the quality of their product and method of marketing was causing a loss of one to two cents a pound. An individually-owned creamery located less than 100 miles from these two plants for the month of March last sold two-thirds of its output at nearly 3 cents net per pound higher price.

A few months ago a paper stated that Iowa was manufacturing one-seventh of the nation's supply of butter. Wisconsin for years has contended that one-sixth was her share. These two states, with Minnesota to the north and west, completes a center where nearly one-half of the creamery butter is made.

The factory problems of these three states are similar not only as to source of the raw material, but the handling of the product from the farm to the market as well. The makers should follow a standardized or unified method. The creamery buildings should be of permanent construction and in charge of men who can be looked to as leaders of the community.

The entire dairy industry and its finished product should reach such a degree of perfection as to invite the most rigid form of state and national investigation that may be demanded by the consumer.

OTHER LINES MAKE PROGRESS.

The farmer of tomorrow is not the man of yesterday. The object in view may be the same, but the goal is reached by the improved road.

He has had the opportunity of better methods outlined for him in part by the experiment station and the extension service backed by the state and the nation. Agricultural papers and dairy and the local press, have been instrumental in putting the material in hand in such a form as to make it interesting and instructive. Your institution at Ames has been a factor in training community leaders. These four-year men returning to the farm, though in many cases remaining silent workers, have been mighty good examples for those who did not have the opportunity of an agricultural education.

During the past year at the close of an address delivered to about three hundred farmers, a number of men remarked: "A few years ago these men would not have accepted the speaker's remarks, because they were not in sympathy with the new ideas, but today it is entirely different. They are at all times ready for the better things in agriculture that will assist them in their work." The farmers instead of discussing market quotations alone will devote the greater portion of a conversation to those problems that influence the cost of production, be it corn or butterfat. Only in recent years have farmers had the slightest idea of weeding out the unproductive members of the herd and locating where the losses occurred.

Last May a patron of a Wisconsin creamery that had not had the advantage of a regularly organized cow-testing association remarked: "The average production of my herd for last year in butterfat sold to the creamery alone, was $140. One cow produced over 600 pounds of butterfat." These and other illustrations could be given to prove that the farmers as a class have advanced by making a study of their problems. Not only do they study the cows, but they are beginning to know the soil, its management and productive value..

They are becoming familiar with modern methods of managing the co-operative creameries. These changes have taken place within the past few years, and form a basis for future plans. In many sections the farmers are not satisfied with the creamery building that formerly answered the purpose. They do not hesitate to erect the best structure that can be put up in order that efficiency may not be hampered. They have even said: "A few years ago a man in charge of the creamery who had the capacity of earning $75 to $85 per month answered our needs; not so today. $150 per month may not mark the limit." This is a plain warning to the buttermaker or creamery manager that they must be better trained.

The creamery of the near future should be one of the places for which the four-year college man should be trained. This will not mean that the efficient man now engaged in the creamery shall be pushed aside, not at all, but it will eliminate the person who has the idea that to make the butter is the extent of his work. The agricultural college each year makes it more difficult for the young man to meet the entrance requirement, because the four-year man is called upon after graduation to handle larger problems. Even the short course in agriculture calls for a better student. The question might be asked: "Is it true in every case that the standard has been raised with a view of making future creamery and cheese factory men?" Is it possible today the same as fifteen years ago for a young man to leave the shop, store or the farm, to spend six months or less in a milk plant, creamery, or cheese factory, and satisfy entrance requirements?

At the close of the course, he is ready for the factory, because he feels that he has mastered the art of butter and cheese making. The young men are not to blame. It is the standard that he is asked to meet. The rules and regulations under the Wisconsin license law have placed the experience requirement at twenty-four months. This will be strengthened in the future.

A creamery operator writes: "The first of this week I hired a man to take charge of the churn at one of our plants. This man comes highly recommended, is a school graduate, has held several positions, and is a horse to work, but he has no more idea of moisture control, uniformity in color and salt, or the making of a good starter than I have of running a bank. We expect to keep him just long enough for us to get another man to fill his place, and you know as well as I that there are hundreds just like him and how anyone could get a uniform system is beyond me.

"We hear a lot these days about better cows, better marketing facilities, better and more sanitary creameries, but what I think we need is a better breed of butter makers and creamery managers, and all the rest will follow. My judgment is that if the dairy schools would cut down their student entries about sixty per cent, establish a higher standard of intelligence for admittance it would be a long step in advance."

Various local organizations of butter and cheese makers have requested the Dairy and Food Commission of Wisconsin to raise the standard of requirements that must be met before granting a license. They are doing this for their own protection and for the good of the men who are efficient and have spent years in the field. The teacher of agriculture in a high school, or a county agricultural advisor, etc., must meet certain requirements, because the community sets the standard. They must be trained men, for the former has to do with the training of the boy for the farm, and the latter with the making of the farmer of the county a better farmer.

The creamery should not be overlooked, because it is the one institution of every locality where leadership is required, and where the person can show in a short time that it is surely the place where money can easily be lost.

THE LITTLE THINGS COUNT.

The farmer is often criticized because he overlooks the little things that count for much more than the things that he at times lays most stress on. An example of this is the price received for 100 pounds of milk, butterfat or cheese, when his larger problem is the cost of production. This is likewise true with some of the creamery men when they consider the questions that may seem large and are of national importance. These problems need not all be mentioned. They all bear a relation to efficiency in factory operation. The water limit in butter or any legal standard and its enforcement must be considered, but the problem of making the butter of such high quality and uniformity that the consumer will buy five pounds in place of four is of far greater importance in dealing with the successful maker. Again, a great deal of stress is put forth by a few men to see how close they may scale the legal standard for water in butter and not pay the penalty. The larger problem should be the putting into every pound of butter such workmanship that 100 pounds may be shipped across the continent and be returned and still weigh 100 pounds. A maker may talk over-run and the factors that influence it or he may discuss the fat standard in butter, because to him it may seem a ponderous question, but at the same time he will pack sixty-four pounds of butter in a tub and accept payment for sixty-two or sixty-three and not question whether or not the actual difference was shrinkage or inaccuracy in weighing the butter. This problem alone is a loss to Wisconsin of 1,000,000 pounds of butter each year.

Time and time again factories take a loss on account of moldy tubs or liners, when the remedy is simple treatment of placing the tubs and liners in boiling water for a period of fifteen minutes and then in cold water before being placed in contact with the butter. The older men, those with years of experience are equal to the job, but it is the less experienced men who should ask themselves the question: "Am I equal to the task?"

WHY THIS HIGHER STANDARD?

This higher standard is demanded in order that the factory industry may be placed upon a higher plane, and the men behind the work when making certain requests may receive a hearing. The industry is of such magnitude as to attract men with special training, age and experience. It has no place for those who think that to be a creamery operator and a skillful maker requires but a few months' training. A few weeks ago a new creamery was dedicated. About 2,000 people gathered for the occasion because it was one of the institutions of the county that had helped to make the homes, the farms, the banks and the business houses. The president of the company told the people that the success of the enterprise was largely due to the man who for eight years had been the buttermaker and the manager.

It is not out of place to mention the fact that butter made in the bulk of the creameries of the country will in the future have a more difficult battle to fight than it has ever had. The competing forces are each year perfecting their organization. We must hold our own.

The buttermaker should be able to assist the farmer not only in outlining for him a method that will result in a higher grade of cream being produced, but to gain his confidence and thus be placed in a position to advise him on other subjects and to inform him of better methods in other farm activities.

In the creamery it is not only the problem of starter making, cream pasteurization and cream ripening and churning, but the making of one churning of butter that is a counterpart of a thousand churnings. In other words, uniformity. This does not refer to the flavor alone, but to the texture or body control, the color and the salt.

During the past few years a number of problems have been studied by the men called upon to further the cause of factory operation. The makers have taken hold of these same questions and together some definite solutions have been reached. In other lines, to the outsider it may appear that we have simply marked time. The factory managers are still working on the problem of the quality of the raw material. They feel that good butter is not the result of what can be done to improve the deteriorated product, but rather how to prevent contamination. They say the farm is the place to begin methods, and frequency of delivery is next in order. Unfair competition still exists in some places.

In Wisconsin as well as in other states, certain counties or sections can be referred to as examples of progress along these lines. Men employed by the state or the county as inspectors or instructors can in co-cperation with the local men accomplish a great deal more than the factorymen can do working alone. These local men can open the field and take the lead. As an example, in a certain community, the creamery had once closed because of lack of quality and co-operation. It was reopened and for a year or two the task seemed hopeless. The state department was called upon and a careful study was made of the situation. Two different meetings were held, where all of the cream producers were asked to be present. In short, the result was marvelous. The words of the owner of the creamery were. "I have 109 patrons, and they have awakened to the fact that by producing good cream they get the benefit in price paid for butterfat. This creamery always paid Chicago butter quotation for butterfat, but now we are able to pay one-half to two and one-half cents above Chicago." In a certain county the creamery men formed a county unit, where all these problems could be discussed and all cards placed on the table face up. The first meeting that they held was the beginning of many lines of activity that will result in much good. In Wisconsin the factory licensing law has already accomplished a great deal to improve factory conditions in general. Operators have made many improvements, thus making it possible for the makers to have a better place in which to do their work. The makers must comply with certain rules and regulations. This all counts for efficiency and is but a step for still greater progress.

DISCUSSION.

Member: Do you have any trouble enforcing the license law?

Mr. Lee: Not very much. We try not to be unreasonable and do all in our power to assist the creameries, whether they be private or cooperative, to better their conditions and for the most part they appreciate the fact that we are merely working for their interests. We find that co-operation is everything and right here I would like to say that I think that all the states should work together. Iowa, Wisconsin and

Minnesota working alone will accomplish little; we must all work together. Organization is everything. An illustration of this fact may be found in the story of the old darkey who had a reputation for miles around for his ability to handle a blacksnake. A certain planter, who wanted that type of a man came miles to see the old fellow. He found Mose out in the barn and asked: "Are you the darkey that can use the blacksnake better than any man in this country?" Mose replied, "I sholy am de man." "Well", said the planter, handing him a blacksnake, "see that fly up on the rafter?" Mose brought down the fly and said, "That fly am no more." "Well," said the planter, see that bee up on the other rafter?" and in turn Mose brought down the bee and said, "That bee is dead." Again the planter look around and finally pointing to a hornet nest said, "See that hornet nest up there?" but Mose stood perfectly still. "Well," said the planter, "why don't you fetch those fellows down?" "Boss," said the darky, shaking his head, "dem fellows is organized."

The President: Our next speaker is a man who needs no introduction, Hon. W. B. Barney, State Dairy and Food Commissioner.

Mr. Barney: Mr. President and Gentlemen: I can hardly tell why I was selected to make an address this afternoon. I want to assure you that I am not prepared for anything at all formal and I might give the same reason that the Mayor did for being chosen. He was selected because he was Mayor and I was selected because I am the Dairy and Food Commissioner of the state. It is really more or less of a habit and I sometimes tell a little story which illustrates what habit will do to you.

We have a man in Des Moines who runs on the West Ninth line, that is the West Ninth street car line. He goes out every morning to the end of that line and hour after hour, day after day, he makes that route, running eight hours a day, and when he gets to the end of that line he makes the remark, "This is as far as I go and here is where you get off." He kept that up for many months and years. Last winter he concluded that he would take a vacation and he went down to Kansas City. Now if any of you have ever been to Kansas City you will know that they have quite a good many very steep hills there and that the country is not very level as is the case around Des Moines or Waterloo. Many of the streets are very abrupt. He was walking about the city, one day, looking at the sights and occasionally gazing up at the high buildings. The streets happened to be very slippery that day, as you will remember we had some icy weather last winter. He happened to be at the top of one of those hills when his feet slipped from under him and he started sliding down the hill. When he got about half way down he came into contact with a very fleshy lady who landed in his lap. They continued down the hill together and when, finally, they arrived at the bottom, he made the remark, "This is as far as I go and here is where you get off."

Now, you, of course, know that this was merely force of habit and I have sometimes told the story just to illustrate what habit will do.

I tell it sometimes to show that this proposition of only washing the separator once a day is just a habit. If you wash it once a day, when you begin you get an idea that it is sort of a hardship. But after you get the habit it ceases to be a hardship. What would you think of a lady who thought that it was undignified to wash the breakfast dishes and then wash them again when she used them for dinner and supper? But it is just as uncleanly to use a separator in the morning and then use it again in the evening without washing it, and it would not prove to be such a great task to wash it each time it is used if you would once get the habit.

You know we have to do things a little bit better these days and there is a pretty good reason why. We have a war on at this time and this is largely responsible for the high prices we are receiving for our butter, cheese, and other dairy products. When this war is over we know what is sure to happen. You know that the party in power has taken off a great deal of the tariff. Politically I refrain from mentioning this fact except as it applies to dairy products. Just as soon as this war is ended we are going to have a large amount of dairy products imported here. These imported products will come into competition with our inferior grade of products rather than with our better grades. Now I want to say that if all the buttermakers of Iowa can make a grade of butter which will comply with the Iowa trademark standards they will be making a products which will pass all foreign competition and they will have nothing to fear but the fellow who doesn't make a good grade is going to suffer. I want to warn you again, then, that we are going to have to do things better in the future.

I was very glad to hear from Lee with regard to conditions over in Wisconsin. I have for a long time been of the opinion that our creameries over here should be licensed. We license the operators and a good many merchants throughout the state and I am not so sure but what the creameries would find it a good thing. Where it is not done I believe that the creameries should pay the cost of the buttermakers' testers' license. All we have to pay for this license is $2.50 a year, whether it is for a buttermaker or a cream buyer for a large centralizer, but I believe that the creamery should pay it.

Now, I am rather strong for licenses. I want to tell you why the people that we don't license in the way of merchants, etc., have been trying to get in on it. I remember very well that last winter a committee from the bottlers came to me and wanted to know how to get in on this license proposition. I said, "Now, why do you want to be licensed?" "Well," they replied, "we feel very certain that there is no way in which we can spend $2.50 or $3 that will help up as much in the way of advertising as to have a license on our walls saying that our place was inspected by one of your men." Well, the Senate put a provision or an amendment into our license law but the House didn't see fit to do anything further in the way of license. We should license all of the restaurants in the state. Demands that this be done are coming in every little while.

One of the things about a license is the fact that it can be used as a club over the head of the fellow who won't clean up. If he refuses to comply with the law you can put it to him in this manner: "If you don't clean up, I am going to take away your license," and the chances are pretty strong that he will soon have his place in a sanitary condition.

SALT INCORPORATION.

BY H. P. BANCROFT.

Gentlemen: I understand that they have given me ten minutes of your valuable time to talk on Salt Incorporation. I certainly can't understand why I was called upon unless the Iowa State Dairy association is on its last lap or that they are hard up for material. I have attended these meetings for the past twenty years and feel amply repaid by having the privilege of talking to you for a period of ten minutes.

In regard to incorporating salt in butter. I consider this subject very important as the majority of people have formed the habit of eating salt in their food and I never knew of good salt harming poor butter. I believe that the proper amount of salt to incorporate in one hundred pounds of butter should be between 3 and 4 per cent; possibly the best butter does not need quite that amount but I am sure that the vast majority of the butter manufactured from hand-separated cream should contain at least 3 per cent. I find that the most of us are in the business to make money for our employers and I believe that it is our duty to incorporate all the salt we can without depreciating the quality of the butter, and at the same time we should try and utilize as much of the salt without waste as we can.

A number of years ago it occurred to me that if I could get rid of all the surplus water which I did not need in the butter that I could then add the amount of salt I wanted to retain. At that time I had charge of a churn where we were making between twelve and eighteen thousand pounds of butter a day. By trying different methods I found it was possible to retain practically all the salt added to the butter. By getting rid of the surplus water and properly working in the salt I find that I make a piece of butter which is almost the same as we used to make on the old Mason, or open workers.

If you wish to incorporate about 4 per cent of salt to the hundred pounds of butter, I find it can best be done by retaining about 15½ per cent of the moisture. The butter will not be free from grit as it is taken from the churn but if you will examine it about thirty-six hours later you will find it thoroughly dissolved, if you have retained the proper amount of water. Butter salted in this way may appear quite dry when it is taken from the churn but after it has been thoroughly chilled if you will cut into it with a wire you will notice that the butter is free from large water cells and that the water has been retained in the butter in minute droplets and that the inside of your butter tubs are free from brine which you would find in a leaky piece of butter, where this salt is not properly incorporated. By using this method I find my butter reaches the market with a minimum amount of shrinkage.

The President: I believe it would be advisable at this time to appoint the various committees. On the Committee on Resolutions I will appoint Mr. Wentworth as chairman and Mr. Stubbs and Mr. McMurray. On the Auditing committee, Mr. Odell chairman and Mr. Gudknecht and Mr. Flickinger.

There is another thing to which I would like at this time to call your attention, and that is the status of the so-called Less than Car Load Rate Case and the Icing Case. As your counsel I take pleasure in saying that while we have had no definite report we are very hopeful that the Commission will rule favorable. We have had many hearings and many witnesses and the amount of evidence accumulated is enormous. The transcript takes up many, many pages and there is a huge mass of evidence to be gone over.

But a case of this kind takes money. Our opponents are represented by many high-class lawyers and are spending money freely. We have been very careful to keep our expenses at a minimum but even then they run up in quite large sums. For example: It is necessary that we have an expert rate clerk, who draws $25 a day. It is necessary to have one for the schedules are so complex that it would take a vast amount of time to go over them.

There are some forty odd creameries which have responded and paid from $10 to $25 for that fund but every creamery in the state is vitally concerned. I am just calling this to your attention so that if you will just remind your boards of directors that they are directly interested in this fight. I think that if the matter is properly presented to the creamery boards that nearly all of them will respond. If they understood better how important it is to them that the Commission hand down a favorable decision I do not believe that there would be any difficulty and I am just asking that you remind them of it and see if they won't contribute $5 or $10 at least. If we could get every creamery in Iowa to come across with this amount it would do nicely.

Mr. Stephenson: I would like at this time to call the attention of the buttermakers to the fact that it is necessary that we get busy and raise some money. Judge Quarton has told you that it took money to carry on this fight. It is also true that he is meeting these expenses out of his own pocket while for his services he has not received a dollar—not one dollar. A mighty good work he is doing and has still to do and yet he has not received one cent. I have been to all the creameries soliciting funds and there are some who have responded. The judge's expenses will be taken care of by the state association but it is necessary that more money be raised. Mr. Quarton states that he is up against a high class of lawyers, but if the truth were told I don't think that they are any better than he is. He is doing something for us which would cost double the amount elsewhere and I think that the buttermakers, for their own protection, should see that he is taken care of. I merely suggest that they take the matter up before their directors in the right light and I feel sure that they will have no difficulty in receiving contributions.

The President: Mr. J. J. Bruner will now take the floor and lead in the General Discussion.

Mr. Brunner: Mr. Chairman, Brother Buttermakers, Ladies and Gentlemen: I always believe that it is better to have discussion along the line of our work rather than for me to get up and make a speech, for you know that I can't do it. If Mr. Eischeid, with whom I am to have a debate, is here, it would be better to have him come up here and start the ball rolling rather than myself. However, I believe that there are a great many things the buttermakers of Iowa can do to advantage, and one of the most important is the education of the farmer in the production of a better grade of raw material.

I have been making butter for the past twenty-two or twenty-three years and in going over times gone by I find that we made very little progress in that respect. We have recently started at Strawberry Point what we call revival meetings among the farmers. We have an agricultural expert who is hired by the Community Club and the schools of the city. The expert, the manager of the creamery, and myself go out into the country schools and hold night meetings, lasting about an hour and a half. The agricultural expert talks to the farmers about feeding breeding dairy cattle and the secretary talks to them on cow-testing associations and things of that kind. I tell them what I know about taking care of milk or cream. We have found these meetings very successful and I believe that nearly every buttermaker in the state can do what we are doing. You don't have to be a great orator to go out and talk to the farmers; they don't expect that when you meet them in a little school house, and after the meeting they come up and ask you questions. We find that it helps a great deal in grading up the raw material.

I think that the first step in making good butter is to get good raw material, in fact I know that all of you buttermakers know what a lot of trouble is caused by a poor quality of raw material. Different conditions demand different methods for improvement but I believe that a little study will enable you to meet the conditions which confront you.

I might add that I am a firm believer in the pasteurization of milk and cream for butter making. I also believe in properly ripening cream with a commercial starter. I do not think that we have paid as much attention to the body of the butter as we should, in the last few years, for I believe that we would not find the body of the butter now on the average as good as it was fifteen or eighteen years ago.

Member: I would like to ask Mr. Brunner what he would do if he was operating a creamery receiving cream testing ten per cent to twenty-three per cent and how he would handle it to improve the quality?

Answer: I think it would be hard to handle in any way and get better results. It would be best to get a heavier cream.

Member: But suppose the patrons refused to skim a heavier cream, what then?

Answer: I don't know. I think, though, that you should keep after them constantly.

The President: We Iowa people have a lot of good neighbors and among them is one living in Illinois and we have him with us today—the Vice-President of the Illinois State Dairy Association, who also happens to be Assistant Dairy and Food Commissioner, Mr. Newman. May we not hear from you, Mr. Newman?

Mr. Newman: Mr. President and members of the Iowa State Dairy Association: I am very much interested in these meetings of the Iowa State Dairy Association for in Illinois we, too, have a state dairy association and I feel that there is much that we can learn from each other.

I am particularly interested in the cream grading proposition and would like to hear it discussed more for I believe that it is a very important step forward and feel that we can learn much from those who have had experience. It means better raw material and better raw material means better butter and this is what we are all striving for. You know we have a lot of food-faddists around the country now who are making a living writing articles attacking the dairy industry, for newspapers. One of the things which, in my opinion, you can do to offset the damage which he is doing is to pasteurize.

We have taken this matter of pasteurization up in our associations and they have passed resolutions favoring it. We have been at this for the last year and a half and this last spring we took a census and found that 98 per cent of the butter made was made from pasteurized cream and that the 2 per cent which was made from unpasteurized came from little creameries in small communities, so that there is practically not a pound of unpasteurized butter leaving the borders of Illinois.

Member: I didn't want to take up any time in regard to this subject of thin cream but before the matter passes over I want to say that I have been in nine creameries where they were having trouble with thin cream. There were a number of patrons who were bringing cream running 23 per cent and less. These cream samples were being tested once a month and of course in the time intervening the buttermaker was unable to give any information in regard to tests. The daily testing system was finally adopted and a record sheet with the number of pounds of cream and butterfat which each patron delivered was placed where they could see it.

It didn't take long after this system was adopted to show these patrons that it would benefit them as well as the creamery if they could be induced to skim a heavier cream. In a short time they had raised their average test to close to 28 per cent. It might be asked if this did not mean more work. It is true that it did but it also improved their average test, for when they could see every day what their tests were they became interested and willing to co-operate.

The President: I would like to call your attention to tomorrow's program. We will be addressed by J. J. Sorensen and H. G. Van Pelt and there will also be a business meeting and the awarding of prizes. I hope that you will all be here and that you will bring some other fellow. Is there anything else?

Mr. Wentworth: I will ask anyone who has a resolution to offer to give it to either Mr. McMurray, Mr. Stubbs or myself, in writing and it will be given consideration. Please do this before nine o'clock.

SECOND DAY'S SESSION.

The President: We are favored in having with us this morning that well-known authority on dairy cattle, Hugh G. Van Pelt, who will speak to us on the subject of "The Greatest Opportunity Available to the Buttermaker and His Patrons."

THE GREATEST OPPORTUNITY AVAILABLE TO THE BUTTERMAKER AND HIS PATRONS.

BY HUGH G. VAN PELT.

I know of no one thing that has been done in any state which is of greater importance in the advancement of the dairy interests of a state, in the advancement of better agriculture in a state by way of maintaining soil fertility than the work being done by the Iowa State Dairy Association. There is probably nothing which can be done which will prove of greater benefit to a state than that which can be done in the betterment of dairy conditions within a state.

I remember well when this show was first started and my own connection with it. When I first came back to Iowa I was asked to address the state dairy association at Cedar Rapids. There was a very large attendance at the meeting and I gave a talk which I had taken a great deal of time to prepare. I believe that the talk was fairly good but somehow there did not seem to be the sympathy which I felt would be forthcoming were I talking to good dairymen. After the meeting was over I tried to analyze the reason why and, upon inquiry, found that in the whole body there had been just two dairymen or producers of milk present. The rest were buttermakers, railroad men, etc., and naturally not greatly in sympathy with what I had to say about mere cows. One of these dairymen was the president who had to be there because he was president and the other was a breeder of Red Polled cattle.

I felt that there should have been a more general interest on the part of the dairymen in these meetings and when I went home after the meeting I said to my wife: "I am going to do one of two things—either get the people of Iowa to thinking dairy cows or else I'm going back where people do think of dairy cows." For I believe that the dairy cow is the greatest producer of good for man and the greatest conserver of soil fertility to be found. Now, I didn't particularly care to go back east so I resolved to do what little I could to arouse interest in the dairy cow. I felt that the buttermakers could do a great work in this respect and that I could safely appeal to them for every buttermaker in the state of Iowa knows that unless milk is produced in large amounts, profitably and in a sanitary manner that his task is one of the hardest in the world.

So it was planned that we should hold a little dairy show in connection with the next meeting of the dairy association. The American Jersey Cattle Club appropriated $175 for prizes, Mr. Barney sent up a few of his Holsteins and Mr. Graves of Missouri sent up a very good Jersey herd. We also had the Arkansas cows from Ames brought up—in all perhaps two dozen cows and a few bulls. We advertised the show and the farmers came. We had a large crowd that year and we took advantage of the opportunity to go over the cows and try to show the farmers the essentials in selecting cows which would produce economically, in large amounts, efficiently and profitably. We were determined to arouse the interest in the dairy cow which was latent in the state of Iowa.

We became so enthusiastic with the results that we determined to have another show on a little larger scale. This we did, and the farmers came in large numbers and when we had paid our bills we found that we had $300 left. Since that time the dairy show has grown until now I stand before you prepared to go on record as saying that at the present time you have the greatest exhibition of high class dairy cattle which has ever been seen in America. I believe that the dairymen will agree with me regarding that, and I also think that the buttermakers will agree with me when I say that we had one of the greatest displays of buttermaking.

I feel like congratulating you as an organization (even if I am a member of your association) upon the monument which you have built in the state of Iowa, which monument I believe will stand long after we here have lost interest in things in which we are now vitally concerned. And I would state that one of the biggest opportunities which the state of Iowa has today and one of the biggest opportunities of the patrons of today lies in co-operation. The value of co-operation is shown by the success of this great dairy show. When this show was established there were but two pure-bred herds of dairy cattle in Black Hawk county; now, you find them scattered all over the county. Good seed had been sown and the farmers of the county began to realize their opportunities and to take advantage of them. The show grew and succeeded through co-operation and because it succeeded it turned the attention of the farmers to progressive dairying and what could be done through co-operation.

There are opportunities without number for the buttermaker to sow the seed of good dairying among his patrons. By taking advantage of his opportunities he can do much toward making Iowa the greatest dairy state in the Union. Now I, personally, am not one of those who believe that the only function of the buttermaker is to make good butter; I believe that he has a task far greater than that. I believe that in his own community, no man can have a greater influence on the thought and advancement than has the buttermaker. He should work zealously to bring about better dairying. He can instill progressiveness in his community by preaching the gospel of better cows, the use of good, pure-bred sires of proven merit, better methods of feeding and management of the herd.

Now I honor the man who stays in his creamery and makes high class butter (for we all realize that the time is coming very soon when we must make nothing but good butter), and I honor the man who has built a large volume of business; but there is a third man whom I honor, and perhaps I should have made him first, and he is the man who not only does the work of his creamery well but is doing mucn to develop his community; he is the man who is sowing the seed which is causing the patron to produce more and better milk. The seed he sows is benefiting himself as well for he is reaping the harvest in cream which enables him to turn out a large amount of high-class butter and show increasing profits for the creamery.

I would leave the question with you as to how you can do the greatest amount of good to your patrons but I do know that, while conditions may vary in different communities, in general the greatest opportunity lying before the buttermaker of today is the improvement of dairying in his community. I thank you.

The President: I believe that Mr. Van Pelt has brought out some facts which may well be pondered. I hope that the buttermakers present will bear his talk in mind.

Member: Mr. President, I have in mind another man whom we used to like to hear and who has been taken away from our association in the past few weeks. I refer to Mr. Spurbeck and I have here a resolution which I think should be sent to Mrs. Spurbeck.

"Resolved, That the Iowa State Dairy Association, in convention assembled, misses the presence and hearty greeting of our long-time member and enthusiastic supporter and we tender our deepest sympathy to Mrs. Spurbeck in her bereavement."

Resolved that the foregoing be made a resolution and that our president be requested to present it in person to Mrs. Spurbeck and convey to her our respect and sympathy.

Carried.

Member: We have always known Iowa as a great butter state but recently it has obtained a start as a cheese state and is rapidly coming to the front in that line. The man who is responsible for this is with us here today and I would like to call on Mr. Murphy for a few remarks.

The President: Mr. Murphy, will you favor us with a few remarks?

Mr. Murphy: Gentlemen of the Iowa State Dairy Association, I was very much interested indeed in the forceful and instructive address of Mr. Van Pelt. I believe with him that the improvement of dairying is one of the most profitable things which can be done for this state of Iowa. We are all interested in making our state bigger and better in every way. Of all the states in the Union, Iowa is probably as ideal a dairy section as can be found.

When my parents came from Cork, Ireland, more than sixty years ago, they left their friends to go where they could obtain something besides the famine which they faced in that little spot in Ireland. They came to America with nothing but a little handbag, carrying probably their little portion of gold, and came to this, the greatest country in the world.

And why is it the greatest country in the world? It is the greatest country in the world because people like them with their little hand bags, their whole possessions, came here starving and in a short time became proprietors. Because thousands upon thousands and millions upon millions came here just as my parents did with opportunities awaiting them, which, attended by their labor and industry, enabled them to build up the greatest country in the world. I mention this merely because I believe that we should remember this; their descendants should keep it in mind at all times and appreciate this great country for if we, like our ancestors, were confronted by famine and take our hand bags to seek prosperity, whither would we go? We, too, should be appreciative and we, too, should do our share in building up this great country, the greatest country in the world.

Now, then, let us turn to the subject about which I am to talk—the cheese industry in Iowa. Everything which Mr. Van Pelt said about dairying with reference to the buttermaker is all right; the improvement in dairying and the development of the dairy farmer apply just as much to the cheese industry as they do to butter making. Both are interested in the dairy cow. It is true that the buttermaking industry largely predominates at the present time but the cheese industry is growing rapidly and whatever will work out to the benefit of the creameryman in his relation to the patron will be equally valuable to the cheese maker.

I believe that Iowa has a great future as a cheese state and I will tell you why. The two big cheese producing states of the Union have been New York and Wisconsin. New York is gradually going out of the making of cheese because New York and Brooklyn and the other large cities of the state are calling more and more each year for milk to supply their inhabitants and I confidently believe that within ten years the supply of cheese from New York will amount to almost nothing, because more milk is going to be needed for the cities and selling the milk to the cities will be more profitable than selling it to the cheese factories. Cheese making is going out in the northern portion of the state of Illinois because milk is being shipped out of those places on fast trains into the city of Chicago. I live in what I believe we may well call the "Switzerland of America"—Allamakee county. There are just a few creameries in that county for there are some places there where it would be impracticable for them to build a creamery and the farmers of that county have been suffering, not knowing where to take their milk.

I have been studying out in what manner those farmers could build a condensed milk factory in the city of Waukon, but I found, upon investigating that business, that it was a dangerous thing for an ordinary man without experience, other than that of a lawyer to go into, and since it would be unprofitable it would not benefit the farmers at all. I went to a man in Wisconsin to see what he could suggest and he told me to put in cheese factories; he said that they would prove a great stimulant to the dairy business and that they would go hand in hand with the creamery business. Over in that state, in Richland county, a rough, hilly country like my own, the country is not adapted to raising corn in any quantities because of the hills and washy character of the soil. Nevertheless, while the soil may not be adapted for corn growing it is adaptable to dairying and they have developed it into a great profitable business. They have over a hundred factories in that county and the bank deposits are larger there than in any other county I know of in that portion of the state. A few years ago a milk condensing concern came into the city of Richland and operated there with great profit to the farmers; they are a great corporation with headquarters out west somewhere. There are creameries in every town in the county operating just as profitably, and probably just as extensively as the cheese factories.

This has so intensified the dairy business there that they have made a very rich county out of it and have developed the dairy business to such an extent that it is now exceedingly profitable for a man to milk cows. And I know what it is to milk cows. When I was a boy not very old I was working for a farmer. July 4th came along and the farmer and his wife left to attend a little social celebration down at the village about a mile away. The hired man went too, leaving me to milk the twenty-five cows all alone. I wanted to go down to the village celebration and so hurried as fast as I could to milk those twenty-five cows—and it was some job. Finally I finished. Just as I was ready to leave, it started to rain and I had to stay at home. Ever since I have always had sympathy for the fellow who had to milk cows—especially on the Fourth of July.

Now, I have started operating a few cheese factories this summer and my only trouble thus far has been in getting the machinery to my factories from the supply houses. They claim that everything is high on account of the war and I cannot get the machinery as fast as I wish. I expect to start another within a short time and I hope to have ten operating within a year; I also expect to build a cold storage in the town that I live in and operate both lines of business, but I don't expect to do it myself; I expect to let men who understand that work take charge.

I believe that this will tend to intensify the dairy business. I don't intend to build a cheese factory where it is going to destroy a creamery; I don't believe in destroying but in building up, and I believe that this is what will happen. Down at the little town of Rosette there is no creamery; there is none within ten miles of Waukon. I have operated from the first of May this year at a reasonable profit and conditions are rapidly improving. They now have sixteen silos there and they are bringing in cows as fast as they can get them. Next year I believe that our output will be trebled. The patrons are all well satisfied, for I think that I may say that they are getting more money than they can get from any creamery, without fear of successful contradiction.

Members of the Boys' Camp at the 1916 Iowa State Fair. These lads, one from every county in the state, won the right to be guests of the fair management for the week in the Essay Contest.

PART VII

Excerpts From the Proceedings of the Thirteenth Annual Meeting of the Corn Belt Meat Producers' Association, Held in Des Moines, January 20-21, 1916

ADDRESS BY PRESIDENT A. SYKES.

Another year has rolled around, and we have again assembled at the call of the secretary for the annual meeting. To the officers and members, we extend a most hearty greeting, and we hope that you will feel that this meeting belongs to you, and will participate most freely in its deliberations. By so doing, you are sure to receive the greatest benefit.

It has become a fixed custom in all organizations such as yours, for the president to deliver an annual address, or, rather, make a report of the work accomplished by the organization during the year past, at each annual meeting. In this way, the members are kept informed of the progress and work of their association.

When I prepared and delivered to you my report as president at the annual meeting in 1914, and refused to stand for re-election, I confidently expected to retire permanently, and believed that I would never again serve you in that capacity or prepare another annual message. But it is said—and we believe truthfully—that "man proposes and God disposes;" so we can not always tell what the future holds in store for us. I have no apology to make for imposing myself upon you at this time. You must hold your board of directors responsible for this situation. At your annual meeting in 1916, you elected Mr. S. M. Corrie to succeed himself, which was very gratifying to us all. At that time, he told you his wife was very ill, and that he did not know what the outcome would be, but we all hoped for the best. But the facts were that Mrs. Corrie's condition did not permanently improve, and during the winter Mr. Corrie was obliged to remain constantly near his afflicted wife, so that it was impossible for him to give to the association the time and attention required. So in March, after due deliberation, and against the protests of some of the officers of the association, Mr. Corrie filed his resignation with the secretary, and on April 10th, at a called meeting of the board of directors, it was accepted with regrets, and your humble servant was prevailed upon to accept the office, and was elected president to fill out the balance of the year, contrary to his own desire and under his protest. This in brief explains to you the

I am again posing as your president, and imposing myself on your valuable time to make this brief annual report.

On account of the lateness of the season when I accepted the work, and because of the fact that I was busily engaged in supervising my own farming and feeding interests, and had made no provision for taking on so much additional work, there was some delay in getting started —but I am glad to be able to report that as soon as I could arrange my affairs to get into the field, the work moved off nicely, and I was exceedingly gratified at the hearty response I met from the farmers and stockmen wherever I went, in securing renewals and new members on the five-year pledge system. It is encouraging to note that the farmers and feeders have come to look upon the Corn Belt Meat Producers' Association as a permanent fixture, and to realize that it has fully justified its existence and is entitled to their support. This sentiment so manifestly apparent everywhere, makes it much easier to build up the association than in the past, and explains why we were able to double our membership in such counties as Lyon, Scott, Dallas, Madison, Union and others, besides making a substantial increase everywhere we worked.

I was also able to collect many of the delinquent pledges and turn the funds in to the secretary. So that, as a whole, I feel that your association is in a very good and satisfactory condition, considering the unfortunate condition that it was forced to meet during the year.

The general accomplishments of your organization during the year, so far as rate matters are concerned, have not been of a spectacular nature. The fact is that the unbounded prosperity of the railroads, and their tremendous net earnings, have had a rather quieting effect upon their restless officials, who have been continuously clamoring for higher rates and more revenue, and they seem to have forgotten that the Interstate Commerce Commission has, on its own motion, decided to make a general investigation of all live stock rates, rules and practices affecting the live stock industry all over the United States, and that it docketed the same for hearing about a year ago. So far as we are informed, the carriers have not insisted on an early hearing in this case, but your association has gone right ahead with its preparations, on the theory that the commission will make this investigation in the near future. When it does come, we must be prepared to defend our interests, or we will suffer seriously in the end.

So, to the end that you may be ably represented in this very important case, your board of directors have employed your old friend and stand-by, Hon. Clifford Thorne—the man who in the past has won so many victories for you, and assisted in giving to the Corn Belt Meat Producers' Association a national reputation. I am sure you will all be very much gratified to know that he is again very intimately connected with us, and will take the leadership in our rate fight. On the other hand, I want you to understand and appreciate the fact that the employment of Mr. Thorne will increase the expenses of your organization, and it behooves each and all of us to exert our every influence to build up the association, so that this increased expense may be met readily and without embarrassment to your board of directors.

Perhaps the most important event occurring during the summer, affecting the stock men's interests, was the formation at Chicago, in June, of what is known as the National Live Stock Shippers' Protective League. This organization is composed of all of the important state and national associations of stock men, along with representatives of several of the state railway commissions in the middle-west, who are in sympathy with our aims, and representatives from several of the big packing concerns. This league was formed for the purpose of taking up questions of national importance which affect and militate against the farmer and stock man, such as the general investigation of and increase in live stock rates; the uniform live stock contract; the Cummins amendment; legislation affecting the live stock industry, and all such matters pertaining to the business. It was felt that by the co-operation and unification of all of these various organizations, a much more intelligent and successful fight could be made than if each was acting independently, on the theory that where there is unity there is strength, and I think you will agree with us that that is true.

After this league was formed, the next question was to provide a plan to finance the proposition, or, in other words, to provide funds with which to carry on its work. It is impossible to do anything along this line without funds. So it was finally agreed by the executive committee, of which your president is a member, to ask the stock men and shippers to the various markets to contribute five cents per car, the same to be deducted from their account sales by the various commission firms and turned over to the treasurer of the league. I believe you will agree with the committee that this was the most feasible and practical way to finance such an undertaking, as the small amount asked for could not become burdensome to anyone, and this insignificant assessment of five cents per car would, in the aggregate, provide sufficient funds to meet the necessary expense. All of the different live stock exchanges except Chicago have uniformly adopted and are collecting the five-cent charge. The Chicago exchange, for various reasons, has failed to adopt this rule, and its members are not uniformly collecting the charge. A committee of stock men, of which your president was a member, has made, during the fall and winter, some three or four visits to the Chicago exchange, and presented this matter to the various firms there, and has finally secured, by mutual consent, the signatures of some seventy odd of the firms doing business there, to an agreement to collect the five cents per car charge, but about ten or twelve firms are still holding out against it. In this connection, I would like to suggest that if any influence or pressure could be brought to bear by our members upon these firms, I believe it should be done, in order, if possible, to make the collection of the charge uniform.

Now, just a few words about the Cummins amendment, and the valuation clause in the live stock contracts. It will be remembered that some four years ago the railroads refused to pay for live stock when it was killed or injured in transit, more than the printed valuation in the contract. This action caused the officers of your organization to bring complaint before the Interstate Commerce Commission, asking that tribunal to increase the valuations on the different kinds of live stock, or, rather, to require the railroads to remove the valuation clause from the contract, thus making the carriers liable for full value. About the same time, the matter was taken up with Senator Cummins, and he agreed to introduce a bill in the form of an amendment to the federal interstate commerce act, which would prevent the railroads from limiting their liability by contract. Your organization, with others, backed this measure, and finally secured its passage. We also fought out the case before the Interstate Commerce Commission, and secured through that tribunal, an increase of 50 per cent in the valuations placed in the live stock contracts, without increasing the rate, making the present valuations as follows: Horse or mule, $150; steer, $75; cow, $50; hog, $15; sheep, $5.

The shippers are also given the privilege of increasing these valuations by paying a slightly increased rate; but no shipper should pay a higher rate on the above valuations than the regular printed tariff.

Unfortunately for the live stock industry, both the Interstate Commerce Commission and the railroads refused to apply the first Cummins amendment to the shipment of live stock, and as a result the law was neither a benefit nor a protection to the stock men. When the situation became known, Senator Cummins was requested to introduce an amendment to his bill which would specifically meet the approval of the Interstate Commerce Commission. Accordingly, about a year ago, the senator introduced the second amendment, and it finally passed the house of representatives, and was signed by the president on August 15th. It was confidently believed that this second amendment fully covered the situation and prevented the carriers from limiting their liability on ordinary shipments of live stock, thus making them liable for full value when accidents occurred. However, the railroads have not accepted this amendment as binding and are still requiring the shipper to place a valuation upon his animals. If he places the valuation above that prescribed by the contract, he is charged a higher rate. So you see the matter is still muddled up. But your officers, along with others, are still working on this matter, and we believe it will yet terminate favorably to our interests.

At this juncture, I wish to drop a word concerning the live stock industry of our state. Immediately following a serious outbreak and devastation by the foot and mouth disease came a period of depression and a succession of heavy losses to the farmers and stockmen; but for the past nine months, prices on all kinds of live stock have been abnormally high. In fact, we are led to feel that they are dangerously high, and if it were not for the extremely high price of corn and other feedstuffs, stockmen would be reaping a rich harvest. However, we must not be deceived by the conclusion that these inflated prices have come to stay, for such can not be the case. We must therefore conserve our resources and handle the situation intelligently, so that when the reverse comes, as come it will, we may meet it with the least possible loss.

One of the most encouraging signs for the future of the live stock business in this state, which we note in traveling around, is the noticeable increase in the number of cattle now being raised on our Iowa farms. This is certainly as it should be, and to my mind will eventually solve the cattle business in this state, and place Iowa at the top of the list as the greatest cattle-producing state in the Union. This is the only system by which we can conserve the fertility of our farms, and be enabled to hand them down to those who will follow us, in a high state of productiveness, and we certainly owe it to future generations to build well in this regard.

The Iowa legislature is now in session, and there will no doubt be legislation introduced during the session in which this organization will be vitally interested. One measure to which I especially wish to call attention, relates to the principle underlying the Torrens system for perfecting titles in real estate. It occurs to me that need for the adoption of such a system at this time is so visibly apparent that it should not be difficult to pass such a bill, and yet it no doubt will meet with the most vigorous opposition. So I would recommend that a strong and forceful resolution favoring the passage of such a bill be adopted and passed by this convention, and that a copy of it be placed on the desk of each member of the legislature. Other bills will no doubt be introduced in which our members and the farmers generally are vitally interested; so it behooves you to be on the alert always and ready to look after these matters.

During the past year, the Pale Horse with its rider has entered our ranks and removed from our midst two who had been most beloved and respected by us all. One was an honorary member, whose presence was rarely missed at our annual gatherings. We all delighted to listen to the words of admonition and fatherly advice by this dean of Iowa agriculture, this sage and pioneer, in advocating better farming, better thinking and better living, with equal rights to all and special privileges to none, but with better opportunities and advantages for the farmer and the stock man. I repeat that we loved to listen to this man beloved of all, and wondered at his great knowledge and the large grasp that he had on the things so intimately and vitally connected with our welfare. I refer to the lamented Uncle Henry Wallace. His voice is stilled in death, and his soul has returned to its Creator, but the example of his life, his teachings and precepts, have been indelibly stamped upon the lives of thousands of Iowa farmers, and will live through generations to come. Uncle Henry Wallace, from the very inception of this organization, took a keen interest in its work and progress. He was the head and spokesman for the committee that conferred with the heads of the Iowa-Chicago railroads to secure the restoration of the return pass to the shippers, and no doubt did more to bring the railroads and the stock men together than any other man.

The other member whose loss we are called upon to mourn at this time was the enthusiastic, whole-souled, energetic untiring member from Sac county, Will Drury. During the month of February, he was stricken and died in less than forty-eight hours. We laid him away with sad hearts, realizing that a leader and commander—a great man, indeed—had fallen. Mr. Drury was a charter member of this association, and served with distinction for a number of years as a member of the board of directors from the eleventh district. He attended our initial meeting, and, with his wisdom and enthusiasm, played an important part in launching this splendid organization. He was a man of sterling integrity and unbounded enthusiasm, and possessed rare qualifications as a leader. He was just the type of man to be of inestimable value to an organization of this kind, therefore we shall miss him the more. He also served with honor and distinction for four years as a member of the Iowa legislature from Sac county. He was one of those big-hearted, whole-souled men whom to know was to love, and when in his presence you could feel radiating from him the enthusiasm which permeated his whole being. We believe that our loss is his gain, and yet how much we miss him! He was always a prominent and commanding figure at these annual meetings.

So, because of the high esteem and mutual affection of this organization for both of these deceased members, I wish to recommend that a committee be appointed to prepare a suitable memorial to each, that a copy thereof be sent to their respective families, and that the same be printed in the forthcoming annual report.

In closing, I wish to say a few words as to the outlook for the future of your association. I consider it indeed very bright and hopeful. There is no longer any question among the better-thinking class of farmers and stock men as to the necessity for such an organization. They have become convinced that they can not secure what is coming to them unless they are organized. They realize that this association has built up an enviable reputation upon its achievements, and that it is in every way worthy of their support. So I predict for you a healthy, vigorous growth in the future, and if each member will use his influence and a little of his time in securing new members, the increase in your membership will be very rapid.

No doubt an eventful year lies before you. You are confronted with by far the most important rate case and investigation you have yet undertaken to defend. Your success will depend largely on the preparation and defense of the case. This can not be done properly without sufficient funds; therefore, it behooves all to work to increase the membership so that ample funds may be forthcoming to fight this case.

Thanking you one and all, who have in any way contributed to the success of the organization during the past year, and bespeaking for you a most prosperous and successful future, I will close.

SELLING DIRECT TO THE PACKER.

BY CHAS. G. COCKERILL, JEFFERSON, IOWA.

My paper is to be short, the intention being to open the subject for your discussion.

I have made many inquiries of packers, of commission men, of the agents of the United States Department of Agriculture, of stock buyers selling to packer agents at the so-called concentration points. (That is, some nearby station designated by the Interstate Commerce Commission in a ruling that has given the railroads at said concentration points the right to stop cars of live stock, unload, sort, water, feed and re-load in double-deck cars if the buyer so elects, and re-ship to the point of destination.) The country buying by packers is done exclusively through these concentration points, as I understand it.

Now the Iowa feeder and meat producer furnish to the market in Chicago, called the Union Stock Yards, 53 per cent, I am reliably informed, of all the live stock handled at the Chicago yards. That is a large percentage. Think of Iowa as a feed lot, helping at this time to feed the world.

I refer to the above to try to bring out what vast interests are at stake for the meat producer, in helping to handle the situation as to the best method of selling. I have no solution to offer at this time as to which method is best, selling to these buyers at concentration points or shipping to some city having stock yards with competing buyers to offer you on your consignment to your commission firm, who, in turn, will sell to the highest bidder.

I am informed by a man traveling in the interest of agriculture that he has found in some of the eastern states that feeders do and have contracted their fat cattle for a certain month's delivery, at so much per 100 pounds. If we in Iowa could buy our cattle and corn, and be sure of the selling price of fat cattle—well, I don't know what we would do with the money.

Now, one of the men at the head of one of the largest packing houses told me, in answering questions, that it might be possible to grade hogs and buy direct on offers sent out, but we could never expect to handle cattle in that way, owing to diversity of quality and prices, as at this time we have cattle selling for from $5 to $12 on the Chicago market. I will leave someone else to explain why there is such a great spread in prices.

I find from Swift & Company's annual report that the dressed beef prices for the year 1916, at Chicago, average $11.19; for the year 1915, $10.85. For the year 1916, at New York, the average was $12.12; for the year 1915, $11.64; also live weight cost average for the year at all points, for cattle, was $7.21. The dressed-beef price was almost $1 per cwt. higher in New York for the past year's average than in Chicago. Was it the freight or the quality?

On the line of selling hogs direct, I find for the year 1916 that there was received at the Union Stock Yards, in Chicago, 9,188,224 head; added to this were 340,042 hogs sold direct to the packers. I take the above figures from the statement of M. F. Hornie, statistician of the Stock Yards Company, Chicago.

As to the causes of the sudden drop in the hog market, which took place, I believe, in September, 1915, when hogs took a slump of from $1 to $1.40 per cwt., Mr. Meeker stated to me, in Chicago, some few weeks ago, that it was a very unusual thing, and at that time their Armour & Company's hog account showed a large loss, and their instructions to their hog buyers were to buy hogs cheaper—and they did. The above has no meaning or conclusion in my mind any more than any other business or transaction.

I am wondering what hit the fat lamb market on November 16, 1916, when they cut 25 to 40 cents per cwt. off the price at Omaha. The high selling price at that time was $11.60; now top lambs at that market bring $13.50. Can anything be done to remedy these bad breaks in the market?

Some tell me that the packers, getting a goodly supply in the country, "lay off," so to speak, on the big market or Union Stock Yards, and do not go out to buy until 10 or 11 o'clock, knowing that their firms have already bought and will receive direct, a sufficient supply of live hogs to keep their employes busy and the plant running full time, even if they fail to buy any that day. But, believe me, when they do go to the pens to buy, look out—there is sure to be a break in the market.

Now, as to the commission men's argument on the country-buying packer. I quote from the market paper, and perhaps most of you have read the same—but it will not take long, and I will read it. It was headed: "Our Country-Buying Packer 'Explains'."

"In Report No. 113, of the United States Department of Agriculture, entitled 'Methods and Cost of Marketing Live Stock and Meats,' there are quoted, at pages 27 and 28, several replies from the five largest packing houses, indicating their position with respect to the country buying of live stock. The article does not indicate the identity of the packer writing each letter, but one familiar with the concerns can identify them in the following order: No. 1, Swift; No. 2, Armour; No. 3, Morris; No. 4, Sulzberger (now Wilson); No. 5, Cudahy. No. 1, being identified as Swift & Company, we will discuss and analyze their arguments to determine the value of each.

"They start off with the same statement made by one Hayward, of Swift & Company, mentioned in our article of September 28, 1916, and in the third paragraph mention the alleged necessity for country buying at Chicago (Omaha Packing Company, Swift), St. Louis (St. Louis Dressed Beef Company, Swift), and Kansas City (Fowler, Armour), and state that by reason of these plants being from two to ten miles distant from the public markets, the 'hogs would have to be loaded into cars, involving expense of loading, switching, as well as shrinkage in transit, all of which would prevent them from competing successfully,' etc. Now, as a matter of fact, every car of these animals loaded at their concentration points is loaded by them, and presumably there is some expense attached to that service; and, furthermore, does anyone think for one instant that the switching charge of a few dollars per car ($3 to $9) is equivalent to the freight they are paying, which runs as high as $30 per car? Or can one imagine that the animals are subjected to more bruises in the short switch move of an hour—or a few hours at most—than in the case of a road haul involving a movement of say 150 miles? Maybe so, but we dobut it, and demand more convincing proof.

"They claim that all of the packers who have slaughter houses in New York and other seaboard points, purchase certain amounts of their supplies in Indiana, Ohio, Kentucky, Virginia, and Pennsylvania, and that 'this buying is by the saving in transportation and feed, in shrinkage in transit, and in freedom from bruises.' This explanation sounds real plausible, does it not? Let us see if their argument 'holds water.'

"If saving transportation charge is a factor, then there would be no reason for going to Iowa for their New England hogs, which could easily be purchased at any open market east thereof at a decided saving in transportation charges. We have in mind one town in Indiana where a witness for Swift, before the committee handling the Borland resolution, testified he had been selling cattle to Swift for thirty years—namely, North Salem, Indiana, from which point the rate on cattle to New York is 33 cents per cwt., which is higher than the rate from Buffalo, Pittsburgh, Cleveland, Cincinnati, Louisville, or Indianapolis, and the same as from Chicago— and yet they talk of saving transportation charges. A similar situation exists on cattle from any number of stations in Indiana, Kentucky and Virginia, and so far as the saving in feed is concerned, the very best they can possibly do is to put their cattle into New York with one en route; that can be done from Chicago, Indianapolis, Louisville, Cincinnati and Cleveland, and can not be done from nine out of ten of their country shipping stations in Indiana, Ohio, Kentucky or Virginia.

"The next factor is 'bruises,' and yet it has always been argued that the main-line, direct-haul service is less hazardous in this respect than the ever-shifting, short-haul, branch-line service which they use on much of their country-bought stock; and, furthermore, if these 'bruises' are due to rough handling in transit, why should Swift & Company worry, since the railroads are responsible for such loss?

"They state that 'Country buying was not inaugurated, so far as we know, with any idea of injuring the business of the commission firms or getting any undue advantage over the owner of the stock.' Shakespeare said, 'Who makes the fairest show means most deceit.' Verily, one must read with care or else be badly deceived. Of course, the country buying was not to injure the commission firms, and we have never so claimed; but if it is not for the purpose of taking "undue' advantage of the stockmen, then can they deny it is to take advantage of the stock men even though not 'undue'? They may deny it, but these facts can not be denied, viz., that every animal they buy in the country withdraws from the open markets just so much competition, and every measure of competition, however small, withdrawn from a competitive market, is instantly reflected in fluctuating bids, resulting in unstable live stock prices.

"Governor Stuart, of Virginia, the largest stock grower in that state, hit the nail squarely on the head in testifying before the house committee on judiciary, considering the Borland resolution (Record, p. 309). Governor Stuart said: 'I say it is that lack of stability in the market that hurts the producers worse than any other feature of it. I would rather work for a little less, if I if could work with a little certainty; but these violent revulsions and these violent attacks that are made on the market, without just cause, are what I am opposed to.'

"That is the whole thing in a nutshell, and all of the explaining that the country-buying packers can do will never remedy the situation nor better market conditions in the least. If Swift & Company or any of the other country-buying packers are in the least inclined to treat fairly with the producers, they will cut out this 'beneficiary' talk and get down to doing business in a manner which will require no long explanations.

"Mr. Country-Buying Packer and Mr. Seller to the country-buying packers, if you want to wreck the greatest and finest marketing system in the world, keep right on as you have been doing; but if you want to be fair to yourself, your competitors and the producers of your raw material, then 'right about face' and help to restore the full competitive strength to the live stock market, by patronizing the open, competitive markets exclusively.

"The National Live Stock Exchange Committee."

In conclusion, what we want is fair price for finished meat, based as nearly on the cost of production, including feed, labor and reasonable profit, and what I condemn as unjust is when a feeder reads the average market report, then prepares, loads and ships to his commission man, his cattle or hogs, and in the one day will appear the statement of heavy runs or poor eastern demands, etc., with a cut in prices of anywhere from 5 cents to $1 per cwt. This is not a surprising thing to happen.

LIVE STOCK IN THE ARGENTINE.

BY PROFESSOR C. F. CURTISS.

Mr. President and Gentlemen of the Corn Belt Meat Producers' Association: We have some good neighbors over on the other side of the equator, in South America, whom we don't know very much about. In fact, they have a saying down there among themselves that the people of the United States have only discovered South America within the past four or five years, and we have not discovered a very large part of it yet. But some conditions and circumstances have brought about a closer relationship between the South American countries and the people of the United States, and I believe that those conditions and circumstances relating to closer relations will be for the mutual benefit of both peoples.

If they had an organization down there similar to this one, it probably would not be called the Corn Belt Meat Producers' Association, but it might be called the Alfalfa Belt Meat Producers' Association. They have in Argentina an area of alfalfa equal to two and one-half times the total area of corn in this state, consequently alfalfa is their chief crop. It outranks all other crops in acreage and in value and in importance to the live stock and agricultural interests of that country.

In the matter of organization, they have an association down there known as the Rural Society of the Argentine, and that is said to be, and doubtless is, the most effective and powerful organization in the Argentine Republic. The Argentine is said to be first a white man's country, and second a cattle men's country. The cattle men elect the legislators and make the laws, and to a large extent determine the policies of that country; and I think the people in this audience will agree that any country that is governed by cattle men is likely to be a pretty good country and under a pretty good government. The Rural Society has a membership of about 3,000 stock breeders and farmers—mostly the former. It was originated by the stock men, and has in later years been extended to include all people on the farms and interested in an organization of that kind. Those men virtually have charge of the live stock interests of that country. It is a large, influential and powerful organization, and has been of great assistance in promoting the agricultural and live stock interests of the Argentine.

Now, the conditions in Argentina are quite different, from the standpoint of beef production, from those prevailing in this country. Argentina is the one and only country that I know of where corn has but little value in beef production. They grow corn quite extensively, but they use very little of it in making their beef, and consequently the cattle men are very little concerned about the price of corn. It would be a happy condition, perhaps, for the feeders in this country just now, if they were independent of the price of corn. In the Argentine, practically all of their beef business is a grazing business, and not a yard-feeding business. The country was originally an open prairie country, as was our own state years ago, and like much of the western range country is today. At the present time, however, the better part of that country is fenced, and, while it is still a grazing and grass-producing beef business, it is on the basis of a large pasture proposition rather than on the basis of the open range. It is true they have in a good many parts open range that has not yet been fenced up or enclosed, and a good deal of unoccupied land; but the richer and more valuable part of the land is taken up, fenced in large holdings, and stocked with very well-bred and improved stock.

One of the things that impresses a man from this country in going there is the extent and magnitude of the great, rich, level, productive areas of land in central Argentina. It compares very favorably with the best lands that we have in this or any other state, and it is devoted almost exclusively to grazing and to live stock production. It is true that they are increasing the area under cultivation, and increasing the output of their grain crops from year to year; nevertheless, the large business there is the cattle and sheep business, and that is almost exclusively a grazing industry rather than a feeding industry. Central Argentina has a mild winter climate, and they are able to graze cattle, sheep and other live stock out in the open with but very little if any shelter the year around; and under conditions of normal rainfall they are able to ship out of their pastures fine beef and mutton every month in the year.

To be sure, they have their difficulties and drawbacks to contend with, the same as we have. In the first place, their range country, to which I have referred, is a better watered country than most of the so-called range country in the United States. They have a fair amount of rainfall, comparing quite closely to that of the Mississippi valley. Sometimes it is not so well distributed. They have very severe periods of drouth. During the past season, they experienced what was said to be the worst one in thirty years—practically no rainfall in some sections of central and northern Argentina from April to November; and that was their winter, a time when they are dependent upon their pastures to carry over their stock. As a result, there were a great many scant pastures and considerable shortage of feed, resulting in a loss in the gains of flesh of live stock, and some deaths among the animals. They are also subject to the attacks of the locust, which is somewhat like the grasshopper scourges that we used to have, sweeping everything before them over the limited area which they infest. But I presume they suffer more seriously from the drouths than any other one cause. Of course, they told us that the drouth they were experiencing was unusual; that they have not had anything like it in thirty years. They are somewhat like some other famous regions in this respect, and as one noted traveler said, "The most common thing in the world is unusual weather," and you find it in every country, I presume.

Their live stock business has been the basis of the prosperity of that country. The great fortunes have been made from cattle and sheep and lands, and agriculture is secondary in importance. They do not depend upon cultivating a large area. A good deal of this range or pasture land which is now enclosed is still in the wild grasses, and with a fair amount of rainfall and the mild winter which they have—it seldom being cold enough to freeze ice in their open water tanks out in these big pastures—they are able to graze successfully the year around.

But the ideal grazing and beef and mutton-making conditions come, not from the native grasses, but from the land which has been under cultivation for a few years, and put back into alfalfa; and when their lands of that kind are put into these alfalfa pastures, they afford the very best pasturage conditions that I have ever seen in any country; and, taken together with their mild climate, I doubt if there is a more ideal cattle-producing country on the face of the globe than they have in the more favored regions of the Argentine. It is a country that is very rich and productive; the soil is exceedingly good, and runs uniform; and when these lands are put into alfalfa, they produce very abundantly a high class of feed. Very little of that alfalfa is made into hay; practically all of it is converted into beef by being grazed on the ground; and where the pastures are well managed, they are practically sure, even in the face of a drouth, of a liberal supply of feed the year around. That is done by the most successful cattle men by guarding against over-stockage.

The alfalfa, when seeded properly and well established, seems to be practically permanent. They refer with a good deal of pleasure and pride to alfalfa fields that have been in for thirty years without a change, and that are still producing abundantly. We are just learning to grow alfalfa up here; we know comparatively little about it, while they have been growing it for nearly half a century. It produces ideal pasture under their conditions. Probably nothing that we have or that you could find in any country will produce so much feed as those rich alfalfa pasture lands that they have there.

They state also that they have no difficulty from bloat. Apparently, they do not. The calves are born in the alfalfa pastures, and they stay there until they are ready to go to market, winter and summer; and apparently the cattle become so thoroughly accustomed to grazing alfalfa that there are no difficulties such as we experience many times in turning cattle onto alfalfa or clover fields.

The thing that impresses you as you go through that country, and especially the older-settled and richer part of it, is the number of live stock that you will see—particularly cattle, and the general excellence of it. We think we have in this state—and we have, according to the records—a large holding of live stock; and that has given this state its great prominence and its strength in the states engaged in agricultural production. But in riding through that country, you are impressed by the fact that they have probably three times as much live stock per farm and per acre as you will see in this country, and in some cases it looks as if they had even more than that. You are also impressed with the general excellence and high quality of the live stock. I think there is more uniformity in the improved breeding, in the general excellence, by far, than we find in the farms of this and other states of the Mississippi valley, where the holdings are smaller; because, naturally, where those holdings are in the hands of men who realize the importance of good blood, and who direct the operation of very large areas, they take every means to improve that stock, just as some of our most capable range men do in our western range country. The general result is that the cattle going to the markets there show a very high general average in their breeding and in their quality. You will find whole train-loads of them running practically as uniform as the animals to be found in the very best feed lots in this country, and they go there finished to a degree that seems remarkable when you think of the fact that they have never tasted grain. If they did not have ideal grazing conditions and favorable climatic and other conditions as well, they could not produce such live stock as they do produce.

It seems to me that the two outstanding features of their success as a cattle-producing country are, first, the importance of good blood and the improvement of their herds and the general breeding up of the live stock, and, second, the importance of good pastures and ideal grazing conditions, whether they be fenced or maintained out in the open. I have never seen a country that possesses so much good pasture land as they have there, and apparently the most successful of those men have learned the secret of maintaining that pasturage in good condition the year around; and that is the real foundation of the beef and mutton-producing industry in that country.

Formerly the richer and better lands around Buenos Aires and the central part were occupied by sheep, and many of the great fortunes have been made by the sheep men; but lately the sheep have given way and gone farther south to a colder region, and to thinner and less valuable land, but land that is well adapted to the production of mutton; so that there has been a gradual shifting.

They have not yet gotten into the hog business. You scarcely see as many hogs in riding a week in that country as you will see in riding across Iowa in half a day; in fact, they have only about one-fourth as many hogs in the whole Argentine Republic as we have in the state of Iowa. It seems strange, too, in view of the conditions which I have described there--very mild climate, an abundance of alfalfa, and good grazing conditions, and the readiness with which they produce corn at a low cost, as well as other farm grains, that they have not gotten into pork production. I think the reason is that the beef and mutton business was established first and it has been so profitable and so satisfactory that the men have not taken time to get into the hog business. Then another reason is that they have not had, until recently, good marketing facilities. The modern packing plant has not been established in South America very long. It is not very many years since they were killing those cattle for their hides and the tallow, and perhaps they were utilizing some of the beef by drying it into what they called shark or jerked beef, cutting it up into pieces somewhat as we do when we prepare it for the drying process, and hanging it out in the open air on a long series of rail fences, or something quite similar, and leaving it there until it becomes dried, so that it can be shipped and used for food. It is treated with some process to keep the flies from damaging it. But when the packing houses came in there, they created a market, or helped to create one, for the finished products, so that they are going out now in the same form that the products go out from our packing houses. And in that connection it is of interest to know that practically all of the large packing concerns are owned by the American packers. There was a good deal of prejudice against them when they went in there. The cattle men contended that they would probably be under a monopoly. The facts were that they had already had a monopoly there under the conditions then existing, and the conditions in general have improved in recent years, and there is, on the whole, quite a friendly feeling toward the large packing concerns that have gone in there. They have developed a better market for a great many of the commoner grade of animals which could not be disposed of formerly under favorable conditions; and, on the whole, they have never had as prosperous conditions in beef and mutton production as in the last few years.

There are some things of interest pertaining to the dealings between the packers and the cattle men down there. In the first place, those men who have large holdings—the big estanchios—and they run up to two or three hundred thousand acres in many cases, nearly all of the land being in large holdings—are big men, and men of a high sense of honor, and accustomed to doing business in a big way. The cattle that go to the large market centers are not shipped in and sold to the highest bidder buying on the market, as they are here, but the most of them are handled in this way: The packing house sends out a man who acts as a surveyor. He visits these large estanchios, makes a record of the number of cattle they have on hand of marketable age, their breeding, general quality and condition, and the condition of the pastures and the probable condition that the cattle will be in when they arrive at market a few weeks or months later, and makes a report to the packing house, in which he estimates the number of pounds of dressed beef per animal that those cattle will probably produce. The owner of the cattle that are ready for the market then goes to the manager of the packing house, and they make a deal on the basis of that estimate; and when the cattle are shipped in by the train-load or half dozen train-loads, they are bought upon that estimate. After the cattle are killed, the manager of the packing house shows the seller just what they actually made in pounds of beef, and they take into account the price that was paid for them. Sometimes there will be, naturally some little variation from that estimate one way or the other. That does not affect the deal that has been made, but each party will remember it, and it will enter into the next deal. The man who gets the short end in one deal tries to get it back in the next, and I am told that some of the largest estanchio managers continue to sell their cattle to the same packing house manager year after year without receiving or soliciting a bid from any other concern. I have said to some of the packers here since I returned that they have a better standing down there than in their own country, because I do not know of any man here who would sell to them on that basis.

One of the packing house managers said to me that these cattle men are the biggest and best cattle men in the world. If a man makes a hundred thousand dollars on cattle on his estanchio, he is willing to reinvest it in the business, and he has confidence to go on improving his stock and his pasture conditions. There is no country where I have ever been, or about which I know anything, where they put so much stress upon the value of good blood as there. We hear a good deal about those conditions, but I want incidentally to refer to some of the conditions which you see in their big show down there.

The show business or pure-bred business is somewhat different from the beef-production business in general, and yet they are closely associated, because the most of the pure-bred herds are owned by the big estanchio managers, and they maintain them for the purpose of providing the bulls that they need upon their ranches to improve their stock, and sell some of the surplus to other dealers. The primary purpose of keeping these pure-bred cattle is to improve their herds, so that they may have better sires to use on these large holdings. We think we have big cattle shows in this country, but so far as the bull shows are concerned, we don't really know what a big show is. They have down there—have had this year—over eight hundred Short-horn bulls entered in their show; and while they had nine rings for bulls, they had in some of them as many as 150 entries, and at the close of the show they held a big sale. The breeders hold a larger part of their surplus breeding stock for this show than they do in this country for any of our fairs, and one reason for that is that this show constitutes the great annual live stock event, and it affords the best market that they have for their surplus stock. At the close of the show, nearly all of the prize animals are put through the auction mart; very few of them are reserved; and the breeders and cattle men from all over the country and several other republics down there as well, come at that time for the purpose of buying pure-bred stock that they wish to procure. The result, of course, is that there is very keen competition for the best. This year, when the reserve champion was put into the ring to be sold (the grand champion Short-horn bull being reserved and not offered), the first bid on him was $10,000, the next $25,000, and from that he went up at increases of $1,000 within just a few minutes until he was knocked off at $50,000. He was bought by a man who is maintaining a pure-bred herd to raise bulls to improve the stock of his and other ranches. In these values, their dollar represents about 42 cents of our money, so you will need to make that discount to get the actual value paid; but even with that discount you can see what prices they paid. In the first afternoon, they sold twenty-five bulls, and they were not the pick or tops of the entire offering, but happened to be the consignment of two men. The average price paid was $9,144, and all of them were bought by these large estanchio owners, and some of them by men without any registered cows on their place, but who maintained large herds of well-bred and practically pure-bred cows for the purpose of raising good sires to improve their stock. Their beef-producing business is on that basis, and, taken together with the fact that they have the ideal climatic and grazing conditions, and that they can depend upon marketing prime beef from their pastures that are well maintained and properly managed every day in the year, without feeding a pound of grain, you can readily understand that their beef production business is on a pretty satisfactory basis. In the years to come, the Argentine is the country that is going to be in a position to supply the shortage of beef that other nations require, to a larger extent, undoubtedly, than any other single country. The Argentine is the only country today that is producing any considerable surplus of beef. We have been exporting some since the war broke out, on account of the stimulus of high prices. Prior to that time, we were not exporting, and under normal conditions, with labor fully employed, it will probably take about all the beef produced in this country to supply our own market. But the Argentine exported in 1913, 366,000 tons of beef, which was more than four times as much as all the other beef-exporting nations combined. You can readily see the strong position they are in, and they are gradually extending and increasing it. They are putting larger areas into alfalfa, with a view to increasing the output of beef from year to year.

They are also increasing the output of their grain to quite a remarkable degree, but farming as such is an incidental business down there compared to this other great business of raising and marketing live stock in the form of good beef. Notwithstanding that, however, the output of export product of corn in 1903 was 82,000,000 bushels; in 1913 it had increased to 189,000,000 bushels. Wheat increased in the same time from 61,000,000 bushels to 103,000,000 bushels; oats from 2,000,000 bushels to 61,000,000 bushels, and flax from 23,000,000 bushels to 40,000,000 bushels. If you go back ten years previous to 1903, the exports of these products were scarcely enough to be taken into consideration. They will undoubtedly continue to increase the output of their grain products, but it will be many years before the farming industry—by that I mean the grain-growing industry—will assume anything like the proportions that the beef and mutton industry have there.

I believe that some day they will get into the hog business on an extensive scale, and become a great factor in supplying the world's markets with pork. When the Armour packing house went in there, the manager, Mr. Finney, started a campaign to encourage and promote the raising of hogs on a large scale, and he said he had met with a ready response, that some of those men were willing to go into it, not on the basis of a few hundred or a thousand head, but would guarantee to produce 50,000 head as an output from some of those big estanchios. But about the time they got that well under way, the European war broke out, and they had no space on their boats for carrying hogs, and the hog men have suffered severe discouragement.

That whole country has suffered by lack of an outlet for their products. They have in the entire Argentine Republic only about eight million people, and 1,800,000 of them live in Buenos Aires; so that there are only a little over six million people for all the rest of the cities and towns and the entire country district, and, naturally, they do not have a large consuming population. These wealthy people live in the cities, and the business life congregates there. The taking out of commission of all of the German boats, practically all of the French, and a great many others, and reducing the number of British boats in service, left them without a means of marketing their products. The grain products and the wool suffered most. The only product that they have continued to take was the beef, and they have taken to the limit of the space upon these British boats each week, because they needed it for the armies and the markets of the allies, and that space is all engaged for months ahead. Of the two British boats that we were on, one of them had a capacity of 10,000 carcasses, and the other of 12,000, and it was practically all the space they had, and those boats would go back loaded to the limit. They have their refrigeration so perfected that the chief engineer assured me that they could carry the meat from the time they loaded it on the docks in Buenos Aires until they landed in London or Liverpool, without a variation of half a degree in temperature in the big refrigerators; consequently it arrives there in prime condition.

While I do not think it is quite the equal of our prime corn-fed beef, yet it has a good reputation upon the British markets, and it sells well, and the people who produce it think it is fully as good as the best corn-fed beef.

They have some peculiar customs down there in regard to eating beef. One is that practically all the beef that is consumed in any of the markets in the Argentine or other countries will be killed and put on the table or sold over the block to the consumer the same day it is killed, or the next day. Hardly any of it is kept for more than twenty-four hours. They have become accustomed to eating that kind of beef, and seem to prefer it to any other. But of course the beef that they export is killed and handled in the coolers and chilled and put in these ocean refrigerators, and goes upon the market in about the same condition that our dressed beef does when leaving our packing houses.

Then, aside from the Argentine, we have conditions up in Brazil, where our friend, Murdo Mackenzie, is located, managing probably the largest estanchio anywhere in South America, and perhaps the largest cattle estanchio in the world. Conditions there are quite essentially different from those in the Argentine, but are nevertheless capable of producing a good deal of beef. Brazil has not figured much in the world's beef supply until recently; in fact, they have no packing houses and no facilities for marketing it, and they have been simply shipping out the hides and selling tallow and shark or jerked beef, as they call it, and the product was not being utilized to good advantage. They have there, naturally, more nearly tropical conditions, and ideal grazing, but of different grasses, and without any alfalfa, as that does not grow there. They have other rich, productive grasses, however, a very well watered country, and generally favorable conditions, except that the climate is too warm, and they have a good many things to contend with there in the way of insect enemies and pests that are even worse than the tick. They have the fever tick, similar to our southern states, but Mr. Mackenzie said that even though they have cattle come from this country that have been through the disease, they are not immune when they get there, but take it again sometimes. But that is not their greatest difficulty. I think the cattle men generally concede that the tick is less injurious and detrimental to their business than the insect enemies and pests, and the flies that they have at certain seasons of the year.

While they have some large enclosures fenced in, similar to those that I have described, the general condition is more nearly that of the open range, and the cattle are more nearly like those of the native stock that we have in Texas and New Mexico, and that they have still today in old Mexico, where they have any cattle at all. They have been crossed with the cebu cattle, which are the native cattle of India, with humps. While they are a large, hardy breed of cattle, and are vigorous and stand the climatic conditions well, they are not what one might term really high-class, beef-producing animals. They seem to have met the conditions there under pioneer improvement as well, perhaps, as any blood that they could introduce, but they have taken the native blood and bred up from that until they have produced a larger, stronger animal, called the caribou, and they are getting some quite good beef from some of those best cattle. Mr. Mackenzie has taken down there a thousand heifers and Short-horns from some of the Texas ranches, and is using them as a breeding herd for building up their live stock in somewhat the same way as it has been accomplished by the long-continued breeding in the Argentine. The work of Mr. Mackenzie in managing this large place is really pioneer work of that kind, and he is doing a great constructive work for that country that will undoubtedly be of lasting benefit.

They have established packing houses, and their meat is now going through them and into the refrigerator cars and boats, and going across the water, and is being quoted in the London markets, and has a fairly good standing, though of course it does not compare with the beef that comes from the better-bred stock of the Argentine or from our corn belt feed lots in this country.

The beef-producing industry is a very interesting business. I have attended a good many of your annual meetings, and listened with a great deal of interest to your discussions; and I believe that the conditions are favorable for the beef producer's business—perhaps as favorable as they have been in recent years. Of course, we have our difficulties and our troubles, and while we are getting high prices today for the meat products, and while there is some complaint about the prices that the farmer is getting and the high cost of living, yet the items of expense, the feed and everything that enters into that beef production, are such that it does not leave the farmer any more than he is entitled to. I think the criticism that is sometimes directed against the farmer for getting high prices ought to be directed to some other source, and they ought to consider what is added to the price of that product after it leaves the farmer's hands and before it reaches the consumer.

I received the other day a very interesting letter from a congressman who had conceived a plan of solving some of the difficulties entering into the high cost of living. He sent me a draft of a bill which he had drawn, and which he proposed to introduce into congress, which was calculated to remedy this difficulty, and asked me what I thought of it. I am free to say that that congressman did not come from this state, but from one not very far removed from Iowa. The two main thoughts were as follows: First, that no male cattle of any breed or grade, or of any description, should be slaughtered under twelve months of age; second, that no farmer or producer should ship, nor any railroad company or public carrier transport, from one place to another, any calf under six months of age, unless accompanied by its mother! I told him what I thought about it, and then I sent a copy of the bill to the editor of one of the leading papers in this congressman's state, and suggested to him that he give it his hearty and unqualified endorsement on one condition—that the congressman be substituted for the calf! I think we have too many would-be statesmen in congress and out of congress who were either weaned too soon or who ought never to have been weaned at all. It reminds me of the story about the Iowa man who wanted to go to Texas, and wrote to a friend, asking him what the conditions were, and the chances for an honest lawyer and a republican. His friend told him they were very good, and to come on; that as an honest lawyer he would have no competition, and as a republican he would be protected by the game laws. It seems to me that some of the statesmen who are proposing that kind of legislation ought not to be exempt under the game laws. I don't believe we ought to have any closed season on that kind of legislation nor on the men who are responsible for it.

If the conditions are right, the farmers and cattle feeders will produce the beef; and we can produce beef, as has been amply demonstrated, that compares favorably with the very best that can be produced in any country, and we can be depended upon to maintain that supply so long as the farm has a fair chance and profitable conditions for producing; and by that I mean reasonably profitable conditions. We will have competition from the Argentine—there is no question about that, and we will have especially keen competition from the Argentine in mutton production, particularly in the production of what is known on the market as a milk-fed lamb, because their lambs can come there at the beginning of our winter, which is the beginning of their spring, and they can be grown and marketed from these alfalfa pastures in prime condition, without the expense of housing and high-priced grain feeding. We will undoubtedly have to compete with that product when we get back to normal conditions, and when they have sufficient ocean carrying boats. Probably the competition in beef will not affect us so much in foreign markets, because if our country is prosperous, we are going to have a good market here. When they get into the hog business down there, they will undoubtedly furnish competition in pork production; and when Brazil develops her cattle industry, which may come about within the next quarter of a century, they will have considerable surplus beef to market. But it is not likely that their beef will approach the quality of the beef from this country in many years to come. Those two great countries down there are the ones that are going to have the surplus of beef. Australia and New Zealand have a surplus of mutton, but no considerable surplus of beef, and probably will not get into the field of beef production; but the beef-producing countries will be the United States and the South American countries, the Argentine and Brazil, and to a limited extent Chile, and a few of those other countries; but it is not likely that they will produce more than enough beef for their own needs for many years to come.

ADDRESS BY PRESIDENT R. A. PEARSON, OF THE IOWA IOWA AGRICULTURAL COLLEGE.

Mr. Toastmaster, Ladies and Gentlemen: Up to this time, I have been enjoying the program very much indeed, and I am sure that you have enjoyed it also. The courses served to us have been excellent, the music has been excellent, and I am particularly pleased that the ladies are here. I have no sympathy whatever with that little libel that is connected with the name of a great man, which involves the ladies. I think perhaps it might furnish some comfort to Mr. Thorne, but I doubt if anyone else in the room would approve of it any more than I do. I refer to a little essay written by a school child on Patrick Henry. It was very short. It said:

"Patrick Henry was a great patriot. When he was a little boy he studied his lesson very hard, and when he grew up he got married, and he said, 'Give me liberty or give me death.'"

Now, Mr. Wallace is a very polite gentleman, and he has suggested to me that I might talk as long as I pleased. But he knows also that I have some courtesy, and he is aware of the fact that earlier in the evening he mentioned that the ladies would have an opportunity to speak after these first two talks were finished. So, in deference to the ladies, I think I ought to be brief, unless the ladies themselves desire to have me occupy the rest of the evening. (Applause by the ladies.) It is very easy to see that the men are not encouraging that applause.

But I am very glad to be here tonight, and I want to thank the officers of the association and all of the members, for the opportunity. If I might come to some opinion by glancing at the attractive badges that you wear, I should have to think that you have the great state of Iowa by the ear tonight! If you have it in that way, I am sure it is a friendly grasp, because you and many others more or less like you have made this great state what it is, and what you are doing is highly respected throughout the length and breadth of our state.

Over in China, every year, the emperor goes out from the capital to the temple of agriculture and plows twelve furrows around that temple, to give emphasis to his countless subjects that the calling of agriculture is dignified. Nothing of that kind is necessary here, because all thinking people appreciate that the prosperity of our nation depends upon agriculture. It has been well said that if the money which has been put into the buildings in our great cities, which has come from the farmers of the country, was to be withdrawn from the cities, there would be hardly anything left; the cities would have to crumble. You know that in years of big crops there is big business. It has been said that the iron and steel industry is the barometer of trade; it is true.

Agriculture is the mother of trade; it makes it. A very little computation will show you that the average acre of land that is now under cultivation raises just one more bushel of produce in this year than it did in last. It would take 12,800 freight trains of fifty cars each to carry that extra one bushel to the markets. Think of how many men that would employ, the cars and the engines and the track. In a very true sense, agriculture is fundamental to our prosperity.

Over in England, on a tavern in a little town, there is a sign-board, beautifully lettered, bearing these words:

"I rule for all.—The King.
I fight for all.—The Soldier.
I pray for all.—The Bishop."

One night, some wag came along and wrote in chalk underneath:

"I pay for all.--The Farmer."

We like to get in touch with big things. There is an old German saying which originated, I think, with the poet Goethe, something like this: "Be a whole, or join a whole." In different language, we might express it this way: "Have a big idea, or attach yourself to one." And so tonight, for a few minutes, I want to be attached to a great, big idea, if I may, and then I want to express that as well as I can to you. Many of you doubtless have been thinking of that same idea more or less. And I might name as the topic for my remarks: "The Future of Agriculture."

One would say, perhaps: "How absurd! Agriculture can take care of itself." And that remark was made by a congressman in 1861, when, in the darkest days in the history of this country, the great Morley land grant bill to establish an agricultural college in every state, was under consideration. He objected to it on the ground that the people engaged in agriculture were amply able to look out for their own welfare, and they would neither ask nor welcome any help from the government.

Well, very briefly, we know some few things that we can mention and leave behind us. This country has long been a well-fed country, and we have been cheaply fed, and until quite recently the farmers notoriously were not being well paid for their work; and, far worse than that, if they had taken into consideration what they had a right to in considering their pay, namely, the value of the soil fertility constituents that were going away from their farms in the products that they were selling. But they did not take that into consideration, and leaving it out, they were able, after a fashion, to make both ends meet. But have you realized that in the last thirty years the agricultural population of our country has not been increasing, and in some of our sections it is actually less now than it was that long time ago? And sometimes, even in quite recent years, it has been easy to show that our crops have been too large to provide a fair return for us; that it actually would have been money in the pockets of the farmers, if, by some concerted action, they they gone out and slaughtered and buried a certain percentage of their live stock, so it would not reach the market, or burned a certain percentage of the grain. No one will think that I am advocating that; I am stating the fact that we have had such years, and within the memory of all of us. And, bringing it right down to date, there is a very large percentage of farms, even in this splendid state, that are not paying good returns to their owners, if you charge against those farms interest on their present market value. One of the reasons why there appears to be so much prosperity in our agricultural sections is that the interest on the present value is being enjoyed as a labor income. But let me tell you that when the next generation comes along onto some of those farms, and the market value has to be taken into consideration, the situation will be remarkably different than it is now.

Now, these things are changing. It is but a few years since James J. Hill, then the president of the Great Northern Railroad, said that within twenty years this nation would go to bed hungry unless some certain developments in the field of agriculture should take place. Agricultural production in recent years has been decreasing. Within the last two or three days there has been sent out from Washington a news item to the effect that in the last sixteen years the population of our country has increased 33 per cent, and the per capita production of 75 per cent of the articles of the American diet has actually been decreasing. During this period, the total number of pounds of meat, beef, pork and mutton, per capita has decreased from 248 to 220 pounds per annum. In 1900, seventeen years ago, we were sending away to European markets an average of about 500,000 live cattle per year. Two or three years ago, before the war—we can get no figures for comparison since the war began—those shipments had decreased to 6,000.

Now, it is easy to make an audience tired of figures, and I shall avoid doing that. I listened to a most interesting lecture by a great astronomer a little time ago, and he was giving us a quantity of figures, and he said he would illustrate. He told us how far it was to the sun. He said he could tell us, perhaps, better in another way. He said if a person would back up to a hot stove and accidentally touch his finger to that stove, he would pull the finger away instantly; but before that finger was taken away from the stove, two things took place—a message of pain was flashed with electric swiftness, or more swiftly even than that, from the point of the finger to the center of sensation; and an order to the muscles to pull away was flashed back. It all happened in the merest fraction of a second, so that it seemed to be instantaneous. Now, in speaking about the sun, if one could stretch out his finger so as to touch the sun—and we assume he would not be burned until the finger came in contact with the sun—then, with the same electric swiftness, before the sensation of pain was felt, it would take that person ninety years to know that his finger was being burned, and it would take ninety years more to get the orders back to pull it away. And thus the distance of the sun was illustrated.

Let me tell you that if you line up, single file, a row of beef cattle from Des Moines, Iowa, to Washington, D. C., you will have in that column just about the number representing the decrease in our exports of beef cattle in the last seventeen years. Think what that means. In 1900, we were exporting annually an average of 300,000,000 pounds of fresh beef, and just before the war we had fallen to 7,000,000 pounds. And we were exporting then 29,000,000 pounds of fresh pork, and just before the war it was 3,000,000 pounds. And we were exporting 90,000,000 bushels of wheat per year, and we had fallen to 30,000,000. And we were exporting 85,000,000 bushels of corn per year, and we had fallen to 40,000,000. And we were exporting then 16,000,000 bushels of oats per year, and that has fallen to 2,000,000. And along with all of those great decreases of exports of our essential food products, there have developed imports, so that we are now bringing potatoes into this country—that is, up to the war—from Europe; and we were bringing back butter from the South Seas, and meat, and even corn, from the Argentine; yes, and eggs from over-populated China were coming into the United States.

That, my friends, represents a tremendous economic change that is taking place, and which has its direct bearing upon the very fundamentals of the great industry in which we are interested, and upon the very fundamentals of our own great nation.

Now, along with all this, I have already referred to the fact that we have been allowing our soil fertility to be taken out of our soil and sent away with our crops, absolutely regardless of its value. Along in the nineties, when wheat was selling for 52 cents a bushel, every bushel was taking away 25 cents' worth of nitrogen and phosphoric acid and potash from the soil; and when corn was selling for 25 or 20 or 8 cents, every bushel was taking away 10 cents' worth of fertility from the soil, and the oats were taking away their portion; and the only reason that we could stand it was that a generous Providence had put those soil constituents into our soil with a lavish hand. If here in this state we were obliged to farm under the conditions that many people have to deal with in other sections of the country, we would find it necessary to restore these soil constituents at the prices I have named. It is needless to say that no supply of fertility can withstand an indefinite withdrawal in such quantities as ours has been standing it. It reminds me of our reckless disregard of the whole subject of natural resources. If ever there was a profligate people in reference to natural resources, the American people would take the prize. Why, down in West Virginia they had what seemed a boundless supply of the most ideal fuel that was ever furnished to any people—natural gas. All they had to do was to put a hole in the ground, and a pipe, and a valve on the pipe, to make it carry anywhere they wanted to, always ready for service; and those people allowed their natural gas to escape—yes, sometimes they lighted the wells and the flames burned up to the heavens. Millions and hundreds of millions and billions of cubic feet of natural gas were destroyed there. The state geologist tells us that the gas was wasted at the rate of one forty-five-ton carload of coal dumped into a bottomless abyss, never to be recovered again—how often do you think? Every minute, day and night, for twenty years. And those American people down there allowed that natural resource to disappear right under their hands, without regard to the fact, and now we are told that at the very longest, the natural gas resources of this country will be exhausted within another twenty-five years.

And in the same way we have recklessly gone into the coal deposits that have been given to us, and the iron; and there never was a sadder story along this line than the way we have treated our forests. In forests, a wealth beyond our power to conceive was given to us, and today, after we have inhabited this country only the short period of a hundred and twenty-five years, we have to shamelessly acknowledge the fact that half of those forests are gone, and half of the half that is gone has been wantonly destroyed by fire and reckless neglect, for which our own people are responsible.

So when I refer to allowing the soil fertility, which is our greatest of all natural resources, to slide away through our crops and through our streams, I am referring to what seems to be a confirmed habit of the American people, to neglect the greatest wealth that could be given to them.

I heard a story the other day of the meanest man, and I think this definition was about right. They say the meanest man was one who kept his wife in bed a full month after she got well, so that the neighbors would keep sending in things that were good to eat. I believe that man, in a sense, can be compared to the American nation, which has been accepting these good things from a bountiful hand that sooner or later will come to recognize that it has been deceived.

Now, friends, far be it from me to be an alarmist; I am not that by any means, nor a pessimist, either. They say a pessimist is a person who has a choice of two evils, and chooses them both. I am an optimist, and although I have painted this just as it is, and it always makes me feel rather discouraged when I go into it, there is another side, and I want you to hear something of that. There are two great remedies for these difficulties, and only two; and they are investigation and instruction. Mr. Thorne referred eloquently to the use of the telephone. What a wonderful thing! I never put the long-distance telephone down but what I think what a marvelous thing that a man here may talk with another a hundred or two hundred miles away as clearly as though they were in the same town. How did that telephone come to this marvelous state of development? He might have told us that also; doubtless he knows.

A few weeks ago I was in the laboratory of a gentleman who is an expert along those lines—Doctor Pupin, of Columbia University—by the way, a poor boy from Serbia—poor, down-trodden Serbia. He has been studying this problem for years, and I asked him to show me something of the apparatus that he used. And so he took me down into the cellar and into the room where he did the work, and there he showed me a box about the size of a good-sized dry goods box, and he said, "That box has 250 miles of fine wire in it." And then he told me something about how he had tried this idea, and then that idea, and one after another had failed; but, believing he was on the right track, he persevered, and finally he worked out by his investigations an attachment that may be placed upon the telephone wire, or in a telephone terminal station, which will reinforce those waves that are passing over the wire, and the attachment may be put on as often as you please; and now, with his invention, you can talk by long-distance telephone clear around the world, if a wire could only be built there, with no limit at all, just repeating this strengthening device. The American Telephone Company was so much pleased to get it that it made him a Christmas present of a million dollars.

But those investigations which command our attention and our interest in mechanical lines are no more wonderful than the investigations that are being made in agricultural lines. What do you think of taking a cow, for example, that will produce only 120 pounds of butter-fat in a year, and then, by intelligent breeding and feeding along lines that have been developed by investigation, improving that animal, generation after generation, until you increase the amount of fat that she gives in a year, not from 120 to 220, but to 1,200 pounds, bringing the amount of fat that one cow gives in one year to more than her weight? Isn't that a marvelous thing to do? What do you think of a man who can go into a country and find 10,000 acres of land lying idle, and that has been idle for years because it would not produce, and taking a sample of that soil into his laboratory and studying it a month, two months, six months, a year, and two years, and then finding that there is a missing element there which can be restored at a cost of only $25 or $30 per acre? And when that is put into the soil, and the soil is properly worked up again, it produces bountifully. Isn't that a wonder? That is investigation, my friends, and we have it always before us as a problem.

Every farmer knows the fact that the seeds of the sweet clover plant have very hard shells. All of the clover and alfalfa seeds have hard shells, but the sweet clover is particularly hard, and the alfalfa is more or less that way. Every farmer knows that a larger quantity of that kind of seed must be put upon the soil than he expects to grow, and if every seed that was planted would grow, he would have a crop so heavy that the plants would suffocate one another. We all know that seed costs a lot of money, and if we could just use less of it per acre, we would save a lot of money. A scientist has been working on that question for years, off and on at odd times, and he happens to be one of the men in our experiment station at Ames. He tried acids to soften the shells of the seeds, and that would not work. He tried concussion to wear them down, and that would not work. Finally he worked out a device that is so simple that it makes us all ashamed that we did not think of it. He lets the seeds fall so that they are caught by a soft blast of air from a fan and forced against the surface of sandpaper, and every seed gets its nose bruised on that sandpaper. It is broken just enough so that when it gets into the ground the water will be able to find its way through the shell to the germ, and it is unnecessary to use so much of it to the acre, and it is money saved.

A big manufacturing concern that I know of sets aside in its annual budget every year the sum of $40,000 for investigation. They have problems coming up constantly that need attention and investigation, and they maintain a large staff of experts for the purpose of studying upon those problems. The General Electric Company, of Schenectady, has a large force of investigators. I believe their head man receives a salary of something like $15,000 or $20,000. Such concerns are constantly confronted by new questions.

Let me ask if there is any industry anywhere that is bigger than farming, with a capital invested in this state of $4,000,000,000; and is there any industry which has problems coming up faster than in agriculture? No. The farmers of this country, and the great work they are doing, are constantly and unavoidably throwing nature out of balance. Did you ever think of it that way? Take a country without people, the great forests growing, the natural herbage, the streams, and everything just as nature would leave it, and then let man come in and replace large areas of forest with cultivated crops—he has thrown it out of balance, and that means that some insects that were before properly controlled by other insects will now be free to go out with their depredations on a larger scale than before. Down in Australia some years ago, they found they could not grow clover any more, according to the report. They formerly had grown large quantities of it, and it was a very important crop. The reason was that things had been thrown out of balance by man. Let me tell you how. The subject was carefully investigated. It was found that they were not growing clover as they had formerly grown it, because they were not as many bumble-bees as there formerly were; and bumble-bees are necessary to fertilize the clover blossoms. And why were there fewer bumble-bees? That was investigated. It was found that there were fewer bumble-bees because there were more field mice, and the field mice robbed the bumble-bees' nests, and got the honey and the young. And why were there more field mice? Because there were fewer owls to catch the mice. And why were there fewer owls? Because there were more men with guns. That is the way men throw things out of balance, and that is the way that, constantly following our progress, there come up problems which we have to solve; and I suppose that is the reason why the Lord put some gray-matter up in the tops of our heads, so that we would be able to use it to work out these problems which our very success and our development are forcing upon us.

Now, no farmer can afford to maintain an experiment station with a $40,000 annual budget, because the farmers' business is not capitalized, as is the large corporation, in the interest of all farmers, and our state governments and our national government have seen fit to provide experiment stations where such problems as I have mentioned, and countless others, are worked out. Your experiment station in this state is spending along these lines a little over $100,000 a year—about 50 or 55 cents per average farmer in the state—for the purpose of determining why it is that we must suffer a loss of six to eight million dollars a year from oat smut. That problem has now been worked out; it is not necessary to suffer any loss from oat smut. You know, in olden times, when a nation began to get hungry, there was just one remedy, and that was to go out and discover some more land to cultivate for the increasing population. I can imagine the conversation that took place between the queen of Spain and Christopher Columbus. Her chief steward came in and said:

"Oh, magnificent queen, our population now has become so great that the people will soon be hungry unless we can provide more food for them."

"Is that so? Then we will have to get more land to grow more food. Send for Mr. Columbus, my discoverer."

So the steward sent for Columbus, and he came in before the queen, and she said:

"Chris, people are going to be hungry pretty soon if we can't get more food for them to eat. I want you to go out and find some more land that no one is using."

So Mr. Columbus got together his crew and came over here and discovered us.

Now the discoverer has lost his job; there is nothing more to discover in the way of land. Have you thought that civilization started away over there in the far east, and has been extended west through Europe and on across the ocean to this continent, and across this continent, and we have gone on around the world? Oh, here and there is a little plot of land that is not used to its fullest possibilities, but so far as vast areas are concerned, they are all gone; and now when the people become hungry, instead of calling upon the discoverer to help them out, they must call upon the scientists, who can tell them how to produce more and save more on the little area than they were doing before. And that is the way we are increasing the size of our state. The good farmers of Iowa, putting into practice the best ideas that are developed, are making one acre produce more than it used to, and in that way we are expanding the borders of our state.

One time, over in a little city of Austria, there was a university built for the German population. In the Austrian cities, people speak different languages; no effort is made there to have one language. This university developed, and proved to be a valuable servant to the people who spoke German. Then the Czechs came along and wanted an institution where their young people could learn, for they were able to see the benefits of that university to the Germans, but they were very ignorant people. After months and years of agitation, one day a mob formed in that city and marched up and down through the streets shouting:

"We want a university; we want a university! The Germans have it, and we want one."

Somebody in that mob was speaking, and was asked this question: "What is a university?"

And the ignorant man replied: "It is a place where you get free bread and free beer, and we want a university."

I thought that was funny, but, do you know, it has been growing on me ever since I heard the story. To that poor person over in Austria, bread and beer meant life, and I want to ask you if you have ever stopped to think where our life-giving substances would be now, and where they will be twenty or fifty years from now, if we fail to keep up with the new problems that are confronting us?

In closing, let me say this: If there were no agricultural institution in this state, the farmers of the state would rise to a man and demand that it should be established, because of the benefits that they know they receive from such an institution. It has been established. So far as I know, it is performing a valuable service to the agriculturists of the state. But, friends, it seems to me that organized agriculture can not do a better thing to keep in close touch with its agricultural, scientific institution. Would it not be an advantage to you, as members of a strong, progressive agricultural organization, and to your fellow-farmers, and an advantage to your college and experiment station as well, if you would show an active interest in that organization by doing in Iowa what has been done in various states—appointing a committee of competent members whose business it shall be to visit that institution and take up with those who are attempting to direct its affairs the questions that interest you? Is it spending its money in a way to serve you best? We honestly believe it is; but it would be worth a great deal to us if we could have you, who are closer to the practical problems of the state than we can possibly be, go there through an appointed committee and go over the matter and see for yourselves, and make suggestions to us as to how that work might be strengthened, and bring back a report to this organization as to how your institution is serving the state.

BUYING FEEDING CATTLE.

BY CHARLES O. CESSNA.

Cattle feeding means soil fertility. The first step in cattle feeding is buying feeders, and to handle them profitably they must be bought at the right time and at the right price. The bulk of western cattle comes to market during the months of August, September, October and November. The average buyer makes but one trip to market, buys when he is there, and sometimes pays too much. It is all right to have a competent commission man do your buying, but sixty per cent of the cattle are bought by commission men who never saw a steer fed. The man who has not fed cattle is not competent to select feeders. I have had an experience of twenty-five years in buying, and yet I learn something every year.

A good time to buy is in August or the first of September. The feeder will then get good gains on grass, and do better than when the cattle are bought later and put right into the feed lot. This is especially true of western cattle.

Last fall cattle began to advance in November, and many feeders of experience bought cattle in the country cheaper than by going to market. The man who took the time in November and December purchased cheap cattle in the country cheaper, that is to say, than in the market.

It is out of the question to have a market without speculators, because of the days of big runs. But, when buying in market, buy at first hand, the day the cattle come in. Last fall, I bought seventy-one head of feeding cattle, separated them into three pens, fed them hay, and sold them the next day. They showed a gain of 4,680 pounds, and were sold to packers. In 1912, in December, I bought ninety-seven cattle from a speculator. When I first met him, he showed me the weights of the cattle, which had just come in that morning. When we got up to the pens, he saw the cattle were eating and drinking, and were going to weigh more, and he was pretty smooth. He said:

"Perhaps there are a few steers in there that you would not want, and you can cut them out, and I will weigh the rest of the cattle."

"Well," I said, "shall I look around a little bit?"

And he followed me around and made the remark three or four times. So when I came back to where the cattle were, I said:

"I guess we will not bother with cutting out any; I will just take them all and take your original weight."

So we got the cattle out, and I sorted them in three bunches, and I had 1,380 pounds more than his weight. We figured up the time that they were in the pens, and it was two hours and fifteen minutes. Those cattle, I think, average about 1,080 pounds each.

A year ago last fall, October 6, 1915, I bought a load of cattle in Kansas City, that averaged about 1,100 pounds each. They were a good-colored load of reds, but very plain in quality. I paid $6.35 per cwt. for them, and that would not indicate pure-bred cattle. The next day, the market was a little better, and I didn't think I wanted to take them home and sell them to my neighbors, and I fed and weighed them and resold them to the packers. There were twenty-one head of those cattle, and they gained 620 pounds.

These figures show that you must be careful in regard to weights in buying cattle in the market, because at these prices it means a big margin. These three illustrations I know are facts. Perhaps someone might question the first statement in regard to those seventy-one cattle, but I can show it to you on the commission firm's books in Omaha. These were big western Nebraska cattle, and were very empty and wild, and when we divided them into three pen and fed them well, and they were let alone during the night, they filled some, as the weight shows. The packers refused to buy them the day before at the price I gave, but they bought them the next day with the fill.

It seems to me that the average feeder in the country does not keep quite well enough posted in regard to buying his feeding cattle. I believe the majority of the men here will agree that that is true. A man knows that the market is depressed and lower this week, but he thinks his work is not in shape to leave, and puts it off until next week, and the consequence is that perhaps his cattle cost 25 to 40 cents more per cwt., and when he gets the cattle fattened, perhaps that difference in the buying is all the profit there is in them. I find that keeping well posted on the market is the success of buying your cattle at the right price.

CO-OPERATIVE PACKING PLANTS.

BY CHARLES W. HOLMAN, SECRETARY OF THE NATIONAL AGRICULTURAL ORGANIZATION SOCIETY.

I can not help but think that in preparing a program, your secretary and chairman could have picked a better man to acquaint you with the progress and status of co-operative packing plants, as I am neither a live stock producer nor a packing house expert. I would very much prefer to talk on the American land question or the co-operative marketing of perishable products. However, the National Agricultural Organization Society, which I represent, found it necessary a few weeks ago to inaugurate a survey of the co-operative packing house industry in the northwestern states, and I promised Secretary Wallace to come over here and tell you just what we might discover in this connection, provided we were able to make any progress by the time that this meeting was to be held.

In an attempt to carry out this promise, I have been traveling continuously for the last ten days, visiting three plants and talking with persons connected with them. I arrived here direct from the Wausau plant, and have had only about ten minutes' time in which to arrange my data. So I am not going to attempt to give you a regular speech. I am simply going to tell you what I have found from the point of view, we might say, of a man who expected to invest in one of these concerns.

The last three years have witnessed a peculiar reaction on the part of the live stock producing interests in this country towards the packers. In addition to the attempts of associations such as your own, through the market committee of the American National Live Stock Association, and the National Conference on Marketing and Farm Credits, of which I am secretary, to secure a cost-finding investigation of the live stock industry from "calf to plate," certain groups of farmers and cattle men have thought that they could establish packing plants and abattoirs in competition with the great packing interests of the country. This unrest on the part of our live stock producers has made them peculiarly susceptible to promotion efforts from the outside. Accordingly, when several groups of shrewd promoters—men who make a business of starting enterprises for other people to carry on after them—have gone into some of the richer states, they have found the farmers an easy prey, and they have succeeded in starting several large enterprises for which they have charged an excessive promotion cost.

Not only have these promoters persuaded farmers to start packing plants, but they have induced the launching of a number of commercial projects whose hopes of success are dubious indeed.

Before going further, I would call your attention to the fact that this talk is directed against the promotion of dangerous and doubtful commercial enterprises, and the misuse of the term "co-operation," and nothing that I say should be interpreted to mean that farmers can not carry on enterprises of a large business character in a co-operative way. Enemies of co-operation have pointed to the packing house situation and claimed that co-operation and co-operative principles will not work, so far as farmers are concerned, in big business operations. To contradict such statements it is only necessary to point to the operation of the California Fruit Growers' Exchange, which represents a combined capital of nearly $130,000,000. This organization, formed on co-operative lines, and controlled by co-operators, annually markets 30,000 or more carloads of lemons and oranges, and maintains a distributing and sale system that blankets the world. But since there is "a time for everything," farmers should beware of undertaking enterprises for which they are not peculiarly fitted, and against handicaps which may be overwhelming.

No one is a stronger believer in agricultural co-operation than myself, and a large part of my activities are devoted solely to the work of spreading the knowledge of and the application of co-operative principles to farm business. With this explanation we may now take up the farmers' co-operative packing company movement, and, from its present status, arrive at some conclusions with regard to the opportunities afforded farmers in this line of business.

The first co-operative packing project undertaken in ths country by farmers was at La Crosse, Wisconsin. I wish that I could tell you that it was built by the farmers when it was started; but, unfortunately, it was not. If there are any stockholders of this plant present (and there are some Iowa stockholders), it will be of interest for you to know that from start to finish no more dubious deal was ever put over American farmers than this one at La Crosse. The Farmers' Co-operative Packing Company of La Crosse closed its doors in December, because Manager D. H. Baker was not willing to keep the plant going when he knew that it would not pay its way. With its shutting down, the community has awakened to realize that the plant itself is practically worthless save for some machinery and the river frontage along the railroad tracks. Of the $265,000 subscribed about three years ago, there is practically nothing left except a dilapidated building and the machinery, much of which is practically worthless—and the prospects of dissolution. How, then, did the farmers lose their money, and why?

I am going to call things by their right names, and am going to name the persons who are deemed responsible for this loss of money and the defamation of the fair name of co-operation in La Crosse.

In the beginning, this packing plant was owned and operated by the Langdon-Boyd Packing Company. The plant, as it was sold to the farmers, was some fourteen years old. Some of the machinery in the building was over thirty years old. At the time the transfer was made, the walls were falling down, the floors were falling in, the timbers were rotting, and very little of the machinery was usable at all. But this condition, of course, was carefully hidden from the farmer stockholders who purchased the plant.

It is said that the National Bank of La Crosse carried a debt of $55,000 or thereabouts against the Langdon-Boyd Company. So, of course, the bank must have known the true condition of affairs. Yet officers and directors of this bank encouraged the farmers to take over the plant at a price which was beyond all reason. In addition, preferred stockholders possessed about $37,000 of Langdon-Boyd stock, and it was necessary to reimburse them in case any disposition was made of the plant.

Andrew Boyd, president and general manager of the Langdon-Boyd Company, was responsible for the operation of the plant at this time. It may be conceived that Boyd became a little desperate. He could barely meet his pay-rolls. He could not provide for necessary improvements. Interest payments at the bank, he found hard to meet, and demands of his stockholders for dividends weighed upon him. So in his desperation, he fell upon a plan to relieve himself of responsibility by unloading upon other persons, or, in plain language, "passing the buck." He conceived the idea of floating a new company—this time a co-operative corporation, under the laws of Wisconsin. He cast about to find the necessary purchasers, and learned of a movement among the members of the Wisconsin Society of Equity for the launching of their own packing house enterprise. This happened in 1913. At that time the equity was composed of about 12,000 farmers of fighting blood and spirit. This society had constituted a packing house inquiry committee, which had recommended the general idea of farmers doing their own packing for themselves. Among the prime movers in this packing house idea was Ira M. J. Chryst, at that time president of both the state and national Equity organizations. Boyd learned that Chryst was the man to see, and opened negotiations with him and others. After some correspondence, Andy Boyd made a proposition to the Equity society, offering to sell his plant for $122,914.36. This he claimed, was less than the true value of the plant. The committee appointed to investigate the matter did not do its work thoroly. There is nothing in the records of this committee to show that they ever sought for a competent packing house expert to look over the plant and advise them as to whether they should recommend to the Equity its purchase at Boyd's price, yet this committee reported an endorsement of the Boyd deal at Boyd's own price.

In 1913, a meeting of the Wisconsin Equity Society was held at La Crosse in December. At this meeting, promoters, Andy Boyd and Ira M. J. Chryst, were instrumental in working the delegates up to a hectic enthusiasm with regard to this particular deal. I have no doubt that the cards were stacked and the whole proposition railroaded thru at the 1913 meeting. But warning-voices were in their midst. One or two men like my friends, Charles A. Lyman, of Rhinelander, Wisconsin, and Dr. Charles McCarthy, of the Wisconsin Legislative Reference Library, denounced the deal on the floor of the convention. Yet the delegates unanimously endorsed the proposition and left the road open for the floating of a farmer company to carry out the deal.

Andy Boyd now went to Chicago and secured the services of one F. A. S. Price, a professional promoter, whose stationery called him "A Financial and Fiscal Agent." Boyd made a contract with Price to give him 15 per cent commission for selling stock in the new company. It was agreed that this stock should be sold as follows: $100 per share for the first $100,000 sold, $105 per share for the next $50,000 sold, $110 per share for the next $50,000 sold, and $115 per share for the last $50,000 sold.

This meant that while the company was incorporated for $250,000, the stock, when sold, would bring in $265,000. Now, in this contract, Boyd agreed not to interfere in any way with Promoter Price's methods of selling stock to farmers. So when the board of directors of the farmers' company came to take over the contract which Boyd had made with Price, they later discovered that they had no power to go to Price and say: "One of your men is making misrepresentations in the sale of this stock, and we demand that you change your tactics."

Boyd now proceeded to have the new company incorporated under the laws of Wisconsin. The constitution and by-laws were fairly good ones, and the company was named The Farmers' Co-operative Packing Company of La Crosse.

When the time came for the election of officers, the persons whom Boyd and Chryst and Price wanted were put on the board of directors, and Boyd and Chryst and Price were also on the board of directors, with Boyd installed as vice-president, and Chryst as president of the concern. Think of putting stock promoters on the board of directors of a farmers' organization! Two other persons, who were undoubtedly dupes, worked in very closely with this group. They did not know always what they were doing; but they helped to constitute the machine which from now on worked smoothly in bringing about the unloading of the Langdon-Boyd property.

With the moral backing of the Equity society, everything was ready for the sale of stock. Additional impetus was given by the fact that officers and directors of the National Bank of La Crosse headed the subscription list. When the farmers heard of this, they purchased the stock without further question, and they accepted the wild stories which in many cases were told them by the stock salesmen. But after the stock sale was well on, most of the bank directors and officers turned their stock over to the salesmen and succeeded in unloading. In the meantime, as fast as the money came in, Promoter Price got his share, and the National Bank of La Crosse took up its notes and the preferred stockholders of the Langdon-Boyd Company were paid off.

In the early stages of the promotion, the farmers had accepted the whole proposition without question. But ugly rumors as to the true value of the plant had begun to float around, and at one of the meetings of the board, the question was raised as to what the plant was really worth. Boyd then produced a person by the name of R. A. Hall, of Grand Rapids, Iowa. Hall claimed to be an efficiency expert. He was employed to value the plant. The report which he turned in was one of the neatest bits of typewriting I have ever seen in my life, and his figures placed the value of the plant up to $140,345.62! Two real estate men of La Crosse and a mechanical engineer or two also corroborated Mr. Boyd's original valuation. In this way the farmers were silenced, the deal was officially approved, and everything went thru. And in this way, something like $100,000 of the farmers' money was lost thru false valuation. In contemplating this transaction, I am tempted to ask: Where are the Wallingfords of yesterday?

The board then proceeded to elect Andy Boyd as manager of the new plant. Boyd selected a man named C. E. De Moss as superintendent, and the two of them undertook to carry on the business for the farmers which Boyd was not able to make pay under his own ownership.

Now where did the money go?

Of the $265,000 which was raised thru the sale of stock, $122,914.39 was paid to the Langdon-Boyd Company. Promoter Price received $37,814.52. It was also found necessary the first year to spend $11,314.20 in additions and improvements in order to make the plant work at all.

Within ten months after the plant was started, Boyd and De Moss had permitted over 277,300 pounds of meat to spoil in the cooling room. In one lot alone there was $40,000 worth of meat. I do not see how any man attending to his business at a packing plant should not have been aware that his temperatures were wrong, and that the money of the farmers was getting away. From this cause and from other irregularities in management and mistakes in purchases of live stock, and in re-sales of live stock at times when the plant could not handle the supply, the Boyd management had lost, by the end of the year 1915, $71,602.34 in operating expenses. In this way, $243,645.56 of the farmers' money vanished. Now, if collections on stockholders' notes had been good, the plant would have had a little more than $21,000 working capital; but collections did not come in as fast as the management might hope, and the company was forced to operate on practically no working capital of its own, and upon a maximum loan of $15,000 which it could secure from the National Bank of La Crosse. In 1916, the plant was forced to spend $11,154.17 in improvements, and, despite the careful management of Manager D. H. Baker, who was placed in charge, the plant lost $3,263.52 in the operating period of November 1, 1915, to December 31, 1916. In this way do we account for $258,063.15 of the farmers' money. It may be well to draw the curtain at this particular point.

I would not leave the story of La Crosse without paying a tribute to the careful and conservative management under Mr. D. H. Baker. Mr. Baker was a stockholder in the plant, and had had several years' experience as a packing house worker, and while handicapped for lack of finances, he did some valiant work in collecting notes which were due and in cutting down expenses and in tryng to put the plant on a paying basis.

With the advent of the Baker management, a number of irregularities were checked up in connection with the Boyd-De Moss regime. One of these occurred in connection wth the spoiling of the meat, when Mr. Boyd managed to get three carloads of the rotten stuff out of La Crosse and down to Chicago. De Moss went down to see what could be done about selling it. He wired back that he must have "$1,000 quick." Telephone conversation developed the fact, according to Mr. Baker, that De Moss wanted this $1,000 to "grease the track." The cars eventually sold, I am told, to Morris & Company, and brought $2,600. If there is a Morris man here, he might investigate as to why it was necessary to "grease the track."

Manager Baker found himself up against a hard job. It was necessary to purchase live stock on a rising market, and he had no stocks on hand from the 1915 low prices. So he worried along until the first week in December, when he closed the doors of the plant and notified the directors.

In all, 2,140 persons purchased stock in this concern. Salesmen went far afield to find their victims. Persons in Iowa, Minnesota and distant parts of Wisconsin subscribed. This scattering of stock ownership brought about a very difficult problem when it became necessary to take some final action for disposing of the plant. The board of directors canvassed the situation and determined to call a special meeting and put the problem of re-incorporation and the building of an entire new plant up to the shareholders; but they were never able to secure a quorum, as 51 per cent of the shareholders are required to be present or to vote by mail on a proposition under the Wisconsin co-operative law, which is a "one-man one-vote" law. Nor were the board able to secure a quorum necessary for legal transaction of business at the annual meeting held this month. And there the matter rests. But the National Agricultural Organization Society, in order to help this situation, has been instrumental in the introduction into the Wisconsin legislature of an amendment to the co-operative law so that less than the majority now required may constitute a quorum where stockholders number a thousand or more in co-operative associations. In the meantime, the annual meeting has been carried over to March 7th, when, if this law is passed by that time, the stockholders will either vote to wind up the affairs of the company, or they will undertake the building of an entirely new plant. The present plant is so dilapidated and out of condition and unsanitary and unsafe, that it is doubtful if the federal government will permit it to be opened again.

In the meantime, the La Cross district farmers are angry and disappointed. Some of them are trying to find out whether they have grounds for action for civil recovery. Others are talking about a grand jury investigation, with the idea of putting somebody behind the bars. Mr. Boyd still holds some notes, one of which is for $5,000, which he made for the company in the National Bank of La Crosse, while manager, and later took up. Mr. Boyd himself is said to be in Montana or some other western state.

But this particular plant could not be made the basis of any just estimate as to whether farmers' co-operative enterprises can succeed in the packing house business. There are other plants in operation and under construction, whose fate will determine the future of co-operative enterprises of this character. The plant at Wausau, which I visited, is a model plant so far as one inexperienced can tell. It was capitalized originally for $250,000, but the farmers of Wausau built this plant from the ground up. In the early stages of their operations, Mr. Price attempted to put in his hand, but he was kicked out. However, he is still operating in Wisconsin, and Illinois, too.

In Wausau, they managed to start with a board of directors who were unusually competent men. The first president of their company is a justice of the Wisconsin supreme court. This board carefully searched the field and found a man whom I believe to be a competent packing house manager. They employed him during the early stages of construction, and they also consulted with the authorities of the United States Department of Agriculture, in Washington. It is said to be an ideal small plant. They have some eighteen acres of ground along the railroad track. The building itself is four stories high, and the equipment is capable of handling fifty hogs an hour.

Mr. L. C. Hoopman, their manager, was for twenty-two years in the packing house business. He has worked for the large packers, but for several years before he took his present employment, he was employed by the federal government as an inspector. He went to the Wausau plant recommended as a man of high honorable instincts. The board also secured—and this is very important—a competent auditor, Mr. C. H. May. I think it important to mention here that Mr. Hoopman, in the days when the plant was being promoted, warned the farmers that they need not expect any profit dividends under the first three years, if they got any then. He understood the business difficulties of starting against competitors who have been able to make the government of England come to its knees. The plant is built on the corner of the eighteen-acre tract, which is divided into feed lots and holding pens. Here are kept piggie sows and, in the summer-time, feeders.

In organizing this company, a fixed commission was paid to Mr. G. H. Horrell. The stock was sold as follows: $100 per share for the first $100,000, $106 per share for the next $50,000, $112 per share for the next $50,000, $118 per share for the third $50,000, which brought into the company a premium of $18,000 above capitalization. The statement of the company of September 22, 1916, shows an organization charge for selling the stock at $27,930.10, in addition to the premium, which means that $45,930.10 was actually spent in organizing this company. They also spent $11,718.18 for real estate and improvements, $116,926.97 on buildings, $29,601.07 on machinery and equipment, and $1,370.33 in the digging of a well. This left only $62,453.35 for working capital; and the statement of the board called for $140,000 in working capital. Accordingly, the stockholders voted to sell an additional thousand shares of the company's stock at $118 per share, and this sale is still in progress.

In all, 2, 017 stockholders had purchased during the year which has just closed. These are mainly within a range of seventy-five miles of Wausau. The volume of business during last year was $850,000. The plant handled 4,539 cattle, 15,671 hogs, 5,868 calves and 750 sheep. These figures were given me by Auditor C. H. May.

Manager Hoopman told me that on the first of last November the plant showed a net profit of $1,800. Since then he said there has been quite a fall in prices of some of the meats which are in stock, and they will not be able to make an annual statement showing a dividend. In fact, they will show a paper loss, altho they are holding their stocks with the idea that some change in the market prices will bring them up in value and show a profit for the year's operations. At Wausau, they claim to grade stock closer than at the Chicago yards. They say that they do not bunch the cheaper grades with the better, thus lowering the value of the lots. They aim to pay the farmer from 10 to 15 per cent per cwt. more than Chicago prices will net him.

The argument usually made in favor of a plant like this one at Wausau is that if the majority of the stock is held by farmers, and if the plant itself is able to make expenses, the farmers will secure enough money at higher prices for their live stock to warrant their continuing as stockholders. At Wausau, people claim that the average prices they have paid for this live stock have been from 10 to 15 cents higher than the Chicago prices, and that this is on account of the difference in freight rates and the saving of the country buyers' commission. I did not have an opportunity to check on these statements, altho I talked with one or two farmers who maintained that holding a share or two of this stock they felt to be a wise investment, as they had, during the year, secured a slight advantage in price for their animals at the Wausau plant.

One of the big problems at a plant like the Wausau plant is to keep the supply of stock regularized. It is necessary for this plant to run at maximum capacity in order to minimize the overhead charges; and in order to aid in regularizing the supply, the Wausau management has organized a co-operative live stock shipping association. The company maintains the control over association managers, and pays them 6 cents on the hundred for handling all the shipments. It maintains a very careful audit system with regard to these shipments as they come in. It furnishes statements in duplicate to the association manager, and to the farmers shipping the stock. Each association has a regular day for shipping, and each farmer has a regular number, which is furnished on metal tags, which he rings the ears of his animals. The weights are very carefully checked at both shipping and receiving points, after which a carefully audited cost-finding system is maintained on each lot that is purchased up to the time that it is sold.

The secret of whatever success the Wausau plant may have had is undoubtedly due to its careful auditing system and the very careful control which the manager has of the plant. He has had to train a number of his men, which is perhaps an advantage, but during the year of its operation, this plant has only run one day at full capacity. It is located in a section of the country that is not strictly a live stock section, and it must depend upon future development for a supply from nearby points. Up to the present, it has purchased from as far away as South St. Paul, and from Green Bay, altho the average territory from which it draws is about seventy-five miles in radius.

It is perhaps fortunate that Wausau and other plants have arranged to handle hogs as the major part of the activities; for the problem of handling hog meat is simplier than that of beef, and sale problems are not so difficult. The Wausau plant makes a great specialty of sausage. It has sold as high as 50,000 pounds in a month. It manufactures over thirty varieties. It maintains a city sales system, a department that handles small 100-pound express shipments, and a sales staff for larger quantities. It has shipped as far as Winnipeg, Canada, and Dallas, Texas, but the greater part of its shipments are to Wisconsin points. Up to the present time, this plant has not undertaken to undersell any of the larger packers. In fact, to do so would be suicidal. They do say that Swift is selling under them at all points, but that the other packers are not.

I should say that if any packing plant under co-operative management could succeed, this one at Wausau will. But, like all new ventures, it still remains to be seen what will develop there.

Now, as to other co-operative packing plant activities. At New Richmond they began building on a $250,000 capitalization, but after investigating the Wausau plant, raised their capital stock to $350,000. At Madison, the farmers incorporated for $500,000, and later raised to $750,000. Both at New Richmond and Madison, the plants will be operating in time to catch the next crop of hogs. A plant of larger size than at New Richmond has opened at Faribault, Minnesota. At St. Paul, sale is on for a plant of $500,000 or perhaps it is $1,000,000—I am not sure. Last week, a great farmers' organization met at Fargo, North Dakota, composed largely of Equity members, and endorsed a stock sale to commence on a $1,000,000 plant. Another co-operative packing company has just opened at Rockford, Illinois. They bought an old plant there, and the same man who officiated as first president at La Crosse, namely R. M. J. Cryst, is also president of the Rockford plant and the St. Paul organization. Cryst was also president at one time of what was known as the Equity Securities Company, a promotion organization to sell stock in enterprises for which Cryst and others secured the moral endorsement of the Equity.

I am told that promotion costs on the Fairbault plant were 11 per cent, but the Madison, Wausau, New Richmond, Rockford and La Crosse projects surely did not come under 15 per cent for the promoters. In Wisconsin alone, it is estimated that over $250,000 will have been spent for promoters' fees on the four plants which have been started.

Word has come to me that farmers in the south are "going mad" over the idea of starting farmers' co-operative packing plants, and I have had correspondence from Missouri parties who tell of great interest in that state in the idea. I understand also that the question may come up in Iowa.

Now, as to the conditions these packing plants must face. Clearly, the starting of any more plants within close touch of each other in Wisconsin would be a further division of territory and would harm the existing plants. Also, these plants may be used by buying butchers and retailers for competitive purposes unless they have some means of keeping in touch with each other. Consequently, the National Agricultural Organization Society has suggested to each of the farmers' co-operative packing companies in Wisconsin that, since the big packers can care for by-products most efficiently, and have advertising facilities and railroad facilities and accommodations and credit and strength and influence, the co-operative packing plants should do something to offset these difficulties. We have suggested that they get together in the near future and form a federation. We have suggested that they take some steps toward working out a common state brand and a common form of advertising, and that they also arrange to purchase collectively all materials used in factories, and to employ collectively legal help and help of a scientific and expert nature, and that they should have an additional department for the instruction of the farmers in order to build and keep a direct interest on the part of the supplies in the co-operative plants.

Looking at this matter as one who would like to see all forms of co-operative effort among farmers succeed, I would say that the question is still an open one whether such plants can succeed. And while I feel that we should do everything we can to help those plants succeed which have started, that there is now time to wait a while, three, four, five or six years if necessary, until we can see what these plants can do, before any of us put any further money into new farmers' co-operative packing house ventures.

It is still an open question whether the small packer can organize his help under the efficiency basis. It is still an open question whether he can get a sufficient supply of live stock at regular periods. It is still a very doubtful question whether, even if they have an efficient management, that the big packers will let so many of these co-operative concerns sell to the regular trade. So, gentlemen of the Corn Belt Meat Producers' Association, it is well to be very careful and to wait. There is plenty of time, and you now have an excellent opportunity of observing whether a co-operative packing concern can succeed without yourselves stepping blindly into the snares spread by the J. Rufus Wallingfords.

FEDERAL MARKET REPORTS ON LIVE STOCK AND MEATS.

BY S. W. DOTY, ASSISTANT SPECIALIST IN MARKETING LIVE STOCK AND MEATS, OFFICE OF MARKETS, UNITED STATES DEPARTMENT OF AGRICULTURE.

Funds which were appropriated by congress in the agricultural appropriation bill for the present fiscal year, for the purpose of starting a market information service pertaining to live stock and meats, have made it possible for the Department of Agriculture to furnish to stock men and to the live stock markets and meat trade, current information along lines which this association and other organizations of stock men have recognized as an urgent need.

It has been impossible to bring about any material improvement in some of the serious conditions which exist, such as violent fluctuations in market prices and very uneven receipts of live stock at the markets, owing, in part at least, to the lack of the necessary information.

The item in the appropriation bill, which has been referred to, is as follows:

"To enable the Secretary of Agriculture to gather from stock men, live stock associations, state live stock and agricultural boards, common carriers, stock yards, commission firms, live stock exchanges, slaughtering and meat packing companies, and others, information relative to the number of different classes and grades of marketable live stock, especially cattle, hogs and sheep, in the principal live stock feeding districts and growing sections; prices, receipts and shipments of the different classes and grades of cattle, hogs and sheep at live stock market centers; prices of meats and meat food products, and the amounts of such products in storage; to compile and publish such information at such frequent intervals as most effectively to guide producers, consumers and distributors in the sale and purchase of live stock, meats and other animal products, and to gather and publish any related information pertaining to the marketing and distribution of live stock, meats and animal by-products."

Before deciding upon the preliminary plans which were drawn up for the beginning of the news service specified in this item, representatives of the Office of Markets conferred carefully with officials of the principal organizations of stock men, including the Corn Belt Meat Producers' Association and the market committee of the American National Live Stock Association, also with representatives of the commission men's national and local exchanges, railroads, stock yards, packing concerns, and other interests engaged in the live stock and meat industries, for the purpose of learning what classes of information, not now available, are most in demand. It was found to be the general concensus of opinion that more accurate and more prompt reports on the meat trade are most immediately needed. In fact, no satisfactory reports ever have been issued whereby market prices of live stock and of dressed meats can be compared from day to day or from week to week. Neither the supply nor the market demands and prices of meats have been made public in such a way as to be of use to salesmen at the live stock markets or by the live stock trade at large. It is no wonder, therefore, that market prices fluctuate so much and that so much dissatisfaction with live stock marketing conditions exists.

A monthly report showing the stocks of frozen and cured meats on hand in wholesale meat-packing establishments under federal inspection, and in the public cold storages throughout the United States, was the first feature of the plan to be undertaken. Similar reports on stocks of eggs, butter, cheese and apples in cold storage had been handled successfully by the Office of Markets for several months past; consequently, the organization which had been developed was readily adapted so as to include the principal classes of meats which are carried in storage. Our first report was issued December 9th, showing the stocks of frozen, dry salt, and sweet pickled meats, and of lard, on hand December 1st, in 352 packing houses and cold storages. These reports are to be issued monthly, within a few days after the first of the month. Although board of trade reports showing stocks of provisions at four or five of the largest packing points, have been issued heretofore, no figures on provisions covering the entire country ever have been available, and this is the first attempt that ever has been made to ascertain and publish the holdings of frozen meats. The wholesale packing concerns, both large and small, have facilitated this undertaking by consenting to furnish prompt and regular reports, and the comments we have received indicate that the information will be of direct interest and value to the meat trade as well as to the stock men.

The organization which has been established for the purpose of collecting and distributing information on the fresh meat trade consists of offices at New York, Boston and Philadelphia, where daily reports are compiled; also at Chicago, Kansas City and Omaha, where the information will be distributed at the stock yards and to stock men in the surrounding territory. The three eastern points mentioned are considered the best barometers of the fresh meat trade in the United States, and are the principal points at which meat is exported and imported. Prominent representatives of the live stock commission exchanges have assured us that this service will assist the live stock trade materially, by giving both sellers and buyers a much closer check than heretofore has been possible upon the meat demand, which is supposed to have a direct influence upon market prices of cattle, hogs and sheep at the stock yards. On the other hand, retailers and jobbers of meats in the large cities will be enabled to buy on a more accurate basis by knowing the receipts and prices of live stock at all of the western markets. It seems apparent that this plan of interchanging reports daily between the important market points where live stock and meats are distributed, should have a decidedly beneficial influence on the stability of market conditions. Another important feature of such a news service is the development of uniform classifications of meat animals and meat products which will result, and the basis which thus will be established whereby the public can see with reasonable accuracy the margins between prices of stock on foot and prices of the finished products and by-products. It is proposed to include retail as well as wholesale meat prices in the reports as soon as the necessary organization can be built up.

After carefully considering various plans for handling reports on live stock shipments, it was decided to adopt an arrangement similar to one which has been in operation by the Office of Markets during the past year, pertaining to certain fruit and vegetable crops. The plan provides for a telegraphic report to the Washington office from the division superintendents of all railroads, showing the number of cars of the products loaded during the preceding twenty-four hours, and their destinations. This service has been conducted with marked success, and its extension to include cattle, hogs and sheep is considered entirely feasible, although the magnitude of the undertaking is apparent. Since January 1st, we have been receiving telegraphic reports on live stock, and are making every effort to develop the service in such a way as to enable stock men to time their shipments to market more advantageously. It is too early as yet to describe certain details which are now being worked out, but we have reason to believe that within a short time it will be possible to remedy the present extremely irregular market runs of stock materially. During the experimental stage of this feature of the project, it is particularly important that we keep in close touch with the stock men, in order to develop the plan along lines which will be of practical use to them.

Plans are also being made for monthly reports, showing in summary form the receipts and shipments of live stock at all the stock yards centers in the United States (of which there are nearly sixty of considerable importance); the shipments of stockers and feeders, both from the markets and from the stock-grazing sections to feeding districts; statistics compiled by the Bureau of Crop Estimates, showing the estimated number of marketable cattle, sheep and hogs in each county of the United States, as compared with the normal; and other information of special interest to stock men, to the live stock markets, and to the meat trade.

The plans which have been adopted and those which are contemplated, relative to these market reports, are altogether along lines which are not already being published or otherwise distributed by existing market agencies. It is our purpose to handle the information in such a form and on such a time schedule that the daily and weekly live stock market papers will recognize its value and give it a prominent place in their pages, in the same way that the weather reports are used by the daily press.

It will be evident to everyone who is acquainted with live stock marketing conditions, that the proposed news service will have to be developed gradually, in order to place it on a satisfactory foundation and build up an efficient organization. It is not to be expected, either, that the information will be generally appreciated or used until it has been thoroughly tried out and its value demonstrated. Organizations such as the Corn Belt Meat Producers' Association can assist very materially in making the movement a success by lending their continued interest and counsel, for which we are already greatly indebted.

EXPERIENCE WITH SHEEP.

BY STUART BAXTER, IDA COUNTY, IOWA.

When I first thought of sheep feeding, about ten years ago, it was with some hesitation that I went at it. I had never had any experience with sheep in all my life, and all the information I could get was that it was a very risky proposition for a man with no experience to try to feed a bunch of lambs.

Old sheepmen told me how hard it was to feed lambs grain without a great many of them dying; that if they got a little too much grain, they would just lie down and die. One man told me that he turned out 300 head into a corn field, and that they would not come in, and that when he found them they had eaten off about four or five acres of corn in the center of the field, and about forty of them had died. He supposed they died of thirst and overeating. Perhaps there was some truth in what these people told me. I will give them credit for one thing at least, and that is that they caused me to be very careful in handling my first lot.

I wanted to feed lambs, but everyone I talked to told me I had better try some older sheep first; that they would be harder to kill, and I probably would have a hard enough experience anyhow. I finally got up nerve enough to tackle the proposition. So I sent an order down to a commission firm in Omaha to buy me a load of choice yearlings, and to have them dipped. In a week or so, I got the yearlings, and took them home. And a nice bunch of sheep they were, 309 head of Wyomings, Cotswold and Merino cross—averaging 72 pounds each.

I turned them onto some wild hay land that lay alongside of about forty acres of corn. This was about the 20th of September. For about three days, I watched them pretty close. I wanted to see how they would act, whether they would get lost in the corn or not. It did not take me long to find that they had not been raised alongside of a corn field. Whenever a few of them would get into the corn a few rows, if a stalk would snap or a leaf would rustle the least bit suddenly they started for the prairie like a shot out of a gun. But little by little they kept working into the corn, until, in the course of ten days or two weeks, I noticed that they were beginning to nibble at the ends of the ears. I kept very close watch of them, as we were running them into the yard every night--and we would count them nearly every day, to see if they were all there. We never found any dead ones.

After a while we got busy picking corn, and did not have so much time to look after them; but we would let them into the yard every night, and out in the morning again. We saw that they had plenty of good, clean water, and we salted them every two or three days, by taking a pail of salt and scattering it out on the pocket-gopher mounds.

We did this so that they would not eat too much pure salt, as sheep will eat salt very greedily, and lambs will sometimes die from eating it too greedily. By scattering it on the gopher mounds, they would get a lot of dirt mixed with the salt, and it would satisfy their appetite for it just as quickly as if they were getting pure salt. I would like to say that nice, clean soil that is not too sandy or gravelly, is one of the best things to keep the stomach of any farm animal sweet, when on a full feed of grain. And I always mix from one-half to one-third soil with salt for at least three weeks after first getting my lambs in the fall.

Well, we ran these yearlings on this hay land and corn field until the first of December. As we were about through picking, and the sheep seemed to be eating lots of corn by this time, I left about five acres of corn, which they had about half picked, and we began feeding some shelled corn and oats in troughs in the yard night and morning, to get them used to the troughs. We also fed some clover hay. By the time the corn was all out of the field, we had them on a good feed in the yard; but we never allowed them to have the corn in the troughs for more than ten or fifteen minutes at each time. If they did not eat it up clean in that time, we took it all out of the troughs.

I shipped these yearlings either just before or just after Christmas —I can't remember which—but they weighed 96 pounds each in Chicago, and I had only lost two head out of the 299. I thought I was pretty lucky, and I commenced to think I would be able to try lambs the next year.

The next two or three years, I put in my order for choice 60-pound feeding lambs, at Omaha, always having them dipped. I handled these lambs in the same way as I had handled the yearlings, only I sometimes had oats stubble that had been seeded to clover, and had a rank growth of clover on it. When this was the case, I would yard the lambs at night, and keep them shut in in the morning until all dew or white frost was off the clover. We had very good luck in this way. But I found it was very hard on the clover. So I would shut them off the clover as soon as I saw they were eating it down closely, and keep them in the corn field entirely. When we were nearly done picking corn, we would commence to feed in troughs.

As I was increasing the number on feed each year, we now had to have a feeding yard and other yards that would accommodate about 500 head in each yard, these yards all opening into the feeding yard. In this way, we would have the feed yard empty, and drive in with a wagon and put in the amount of grain for 500 head, as we had trough room for only that many of them to eat at once. As soon as the grain was in the trough, we would open the gate from one yard, and in about thirty seconds, 500 head of lambs would all be eating.

While these were eating the grain, we would have another team ready with the hay, and fill the hay racks while the lambs were out. By the time the hay was in the racks, the lambs would be done eating grain, and ready to be put back in their yard. Again the feed troughs would be filled for another yardful, and so on until all had been fed.

Now, this seemed a good way to feed; but as time went on, I was always looking for some easier way, and planning how it could be done, as this trough feeding was always a seven-days-a-week job. The past three years I have been handling them in a little different way.

Also, I got to thinking that as I was buying twenty to twenty-five carloads each fall, that I had better get out and try to buy direct from the producer, and save commissions. As I had some western land interests to look after I got to looking around for some outfit that was raising about the number of lambs that I was feeding, and that had the right kind of lambs to feed well.

Finally, I got track of a man who had been in the sheep business in Montana for thirty-five years, and was a thorough business man, and a gentleman in every respect. I will never forget the way he entertained me when I went out to buy the lambs. But I am getting off my subject, and must talk about sheep feeding instead of sheep buying.

The past three years I have shipped my lambs direct from the range, and put them in the corn field exclusively. But before turning them in, I have cut two or three rows of corn around the outside of the field; also two or three rows through the field, leading to the watering places. When the lambs come to the outside of the field, or to the rows cut through the field to the watering places, they will follow these open spaces until they come to water, and in a few days they learn where it is.

I am very fortunate in having some small creeks in my fields farthest away from the buildings. Of course these fields have some muddy places, and these we watch and cover over with boards, to keep the lambs from getting stuck in the mud, as lambs will often do. In the fields nearest the buildings, we put in tanks, and arrange things so that the lambs can not get into the tanks and get drowned, another thing which lambs often do.

For the first two or three weeks, we do not feed anything but what they get in the corn field, as the leaves furnish plenty of roughness, and they do not eat much corn for about ten days. Then, when the leaves become scarce, we set out hay racks in the corn field, generally on the spots where the soil is the poorest. As I am raising alfalfa now, we feed alfalfa hay in the racks, all they will eat, using the best hay we have. For, when they are on a full feed of corn, they do not seem to care for any hay that is the least bit off through being exposed to the weather.

When the corn begins to get a little scarce in the field, we set out self-feeders. These are made on the same principle as cattle self-feeders, only they are smaller, holding about sixty-five to seventy bushels of grain each. We fill these feeders with corn, oats and oil meal, mixing about five parts of corn, one part of oats, and one part of oil meal, but sometimes using more oats, if we are short on corn. Barley is also an excellent feed for lambs, but not much is raised in our vicinity, and it is too high-priced to feed at present.

I have found the self-feeder the most economical way to feed, as the labor is very much less, and the work can be done any time of day. The main thing is to keep the feeders filled up, so that you have two or three days' feed ahead all the time. Then, if you have a few days of bad weather, you are always ready for it, and you can also get off from working on Sunday.

Another thing I practice is topping out my lambs. After feeding about fifty days, we run them through the chute and cut out all the heavy lambs and ship them. Then in about two or three weeks, we run them through again. In this way, we get very even bunches on the market, and nearly always top the market, as the buyers are looking for a certain weight, and they want them even in size.

I just want to say a word as to the best kind of lambs to buy. For the corn belt feeder, buy lambs weighing from fifty-five to sixty pounds. I prefer a Merino-Cotswold-Hampshire cross. The Merino blood gives the hardiness and closeness of wool. The Cotswold puts more length to the wool, and the Hampshire gives the bone and size. I don't know where you could get a better combination than this. But be sure to get a healthy, thrifty bunch. Then, if you give them the right care, they will repay you well.

We have had some trouble with the third and fourth cutting of alfalfa causing death to the lambs this last year; and this coming year I am going to try chopping the first and second cutting and mixing with the grain in self-feeders. In this way, I think they will eat stems and all, and prevent waste of hay.

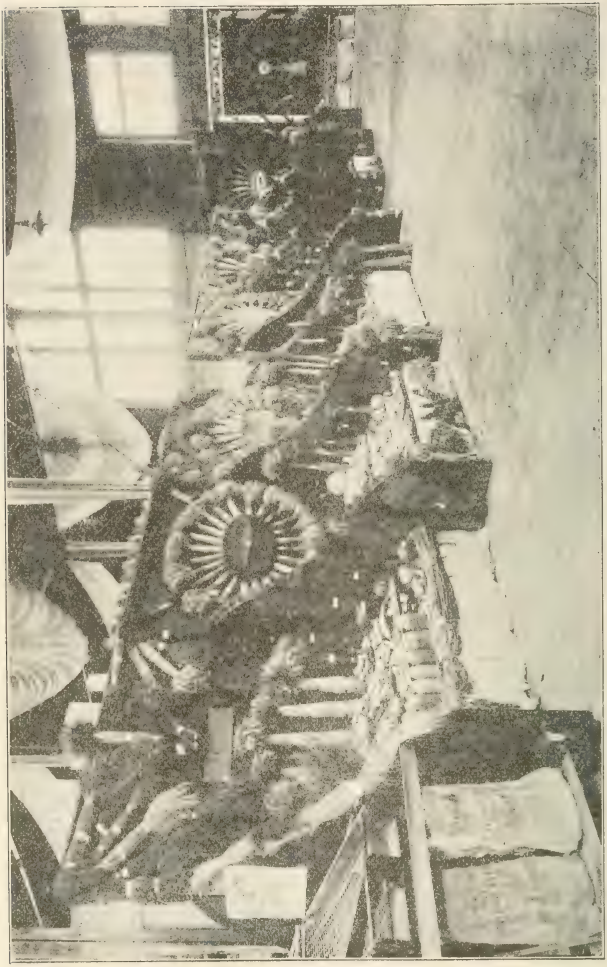
Finally, I find that lamb feeding has been a fairly profitable proposition in several ways:

First, they pick all the corn for me, board themselves, and never charge me a cent for doing it.

Second, they haul the manure and spread it free of charge, generally picking out the poorest spots to put it on the thickest.

Third, they do not ask for any shelter, only a good windbreak, which they always find for themselves on our hilly land.

In the past four or five years, I just turn them in the corn field and never take them out, except when we bring them into the yards to sort them for shipping.



A section of individual farm exhibits at the 1916 Iowa State Fair.

PART VIII

Bulletins and Papers on Miscellaneous Topics

EVERGREEN TREES FOR IOWA.

BY G. B. MACDONALD.

Bulletin No. 170, Iowa State College of Agriculture.

Evergreens, or coniferous trees, are of great importance in Iowa for shelterbelts and windbreaks, to say nothing of their value for ornamental planting. Although only a few evergreens are native to Iowa, a large number have been successfully introduced into the state, including several from Europe. The most desirable of these are listed in this bulletin with brief descriptions of their characteristics, their value for various purposes and methods of planting and growing.

A shelterbelt is essential on every farm in Iowa to protect the home buildings and the feed lots. If it is not provided by natural timber, then a shelterbelt should be planted. Likewise, the windbreak, consisting of a single row of trees for the protection of farm crops from the drying winds, is of value in Iowa, particularly in the northwestern part of the state. The evergreen lends itself excellently to both uses—much better than trees which shed their leaves in winter time when shelter-belt protection is especially needed. Evergreens may also be used for the planting of waste areas of sandy, rocky or wet lands to produce posts, poles or lumber. They may also be used effectively on lands which are too steep for cultivation to protect them against erosion.

TREES FOR PLANTING..

As a rule, evergreen trees make a very slow growth during the first few years, and stock suitable for field planting is generally from three to six years old. The average planter does not care to wait this long to grow his own trees, consequently he must purchase from a commercial nurseryman. Evergreens are also much more diffcult to grow than the broadleaf trees and it is generally preferable to purchase trees of the proper age, size and quality from a nurseryman of good standing who will guarantee the trees to be the species and grade specified.

Evergreen seedlings (i. e., small trees which have never been moved from the seed bed) may be purchased for considerably less money than "transplants" of the same age and variety. The additional labor involved in transplanting or replanting the young trees one or more times naturally increases the cost of producing stock of this grade. As a rule, however, transplanted evergreen trees, although more expensive at the start, are more economical in the end, due to the fact that a greater per cent of the trees live after the final planting. This is especially true when the trees are to be planted on dry or exposed situations where conditions are not the best for growth. The transplanting operation stimulates the development of a more compact mass of roots of shorter length, thus making the trees more easily handled. Transplanted trees generally establish themselves more quickly than seedlings.

The age and size of trees most suitable for planting differs with the species, the soil and moisture conditions of the land to be planted, and also depends on the purpose of the planting. In general, small trees, (i. e., 6 to 8 inches high) should be used. Small stock is less costly, is cheaper to plant, and generally gives better results. When only a few trees are to be planted, as for ornamental purposes, it is sometimes desirable to use stock which is from 18 inches to 3 feet in height, although trees of this size may be relatively expensive. If an evergreen windbreak, shelterbelt or woodlot of considerable extent is to be planted, it is generally preferable to use small, thrifty, transplanted trees, not only because of the smaller cost of the trees themselves, but also because they can be planted more economically.

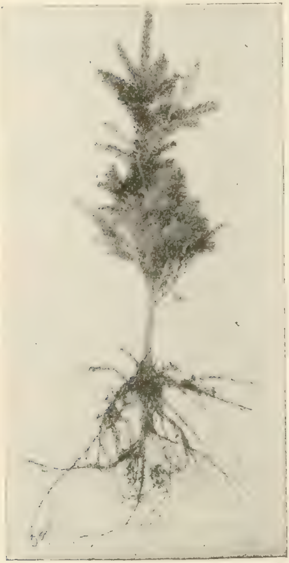


Fig. 1.—A thrifty Norway spruce one foot in height with a good root development.

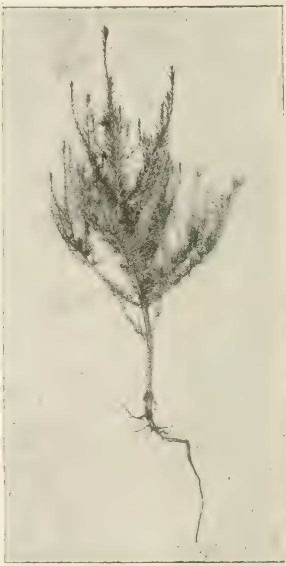


Fig. 2—A young European larch tree showing a poor root development.

PLANTING AND CARE.

In Iowa, evergreen trees are best planted in the spring as early as the soil can be conveniently worked. Order the trees long enough in advance to make such that they will be on hand for early planting. In all cases, set the trees out before the new growth starts, since it is much more difficult to get good results after new roots have formed and the buds are opened.

Receiving the Trees: The nurseryman shipping the trees should pack them in such a manner as to prevent the roots from drying. Generally evergreens are received in good condition if there has been no delay in transit. In case weather conditions will not permit the planting of the stock immediately on being received, protect the trees carefully from drying out. Take trees from the shipping package and "heel" them by burying the roots in cool, moist earth. Protect the trees from the sun and drying wind by spreading a mulch of straw or leaves over the bed, or by placing them in the shade of some building. "Heeling in" prevents the trees from drying out and also by keeping them in a cool place, prevents them from starting growth.

Preparing the Ground: Many failures in planting evergreen trees result from a poor preparation of the soil. For best results, plow the soil deeply and thoroly harrow it before planting is attempted. As a class, the evergreen trees will endure soils of poor quality and when once established need little care. Some attention at the outset will often be the means of securing a good stand of trees in the windbreak or shelterbelt.

Keep the Roots Moist: The first essential in planting evergreen trees is to prevent the roots from drying. When time will permit, it is quite desirable to select a cloudy day when there is little or no wind. It should be borne in mind that evergreens must be handled with much more care than broadleaf trees in planting. It is often possible to expose the roots of some of the hardy broadleaf trees for several days without serious injury. On the other hand, only a few minutes' exposure of the roots of evergreen trees to the sun and wind will often prevent their starting growth. At the time of planting, carry the trees, a few at a time in a bucket or other vessel, where the roots can be well protected with wet moss, leaves or earth, until the tree is actually placed in the hole for planting.

Trimming the Roots: Before planting the trees, carefully cut off the long, straggling roots and those which have been injured, using pruning shears or a sharp knife. As a rule, stock of relatively small size which has been once or twice transplanted is in good condition for planting. It sometimes happens, however, in planting seedling stock that the roots are very irregular, some long and some short. In such a case the long roots should be trimmed back.

Setting the Tree: If the soil has been thoroughly prepared beforehand by plowing and harrowing, the planting operation will be much simplified. Make the hole for the tree amply large. For a tree 18 inches in height the hole should be from 15 to 18 inches in diameter. The

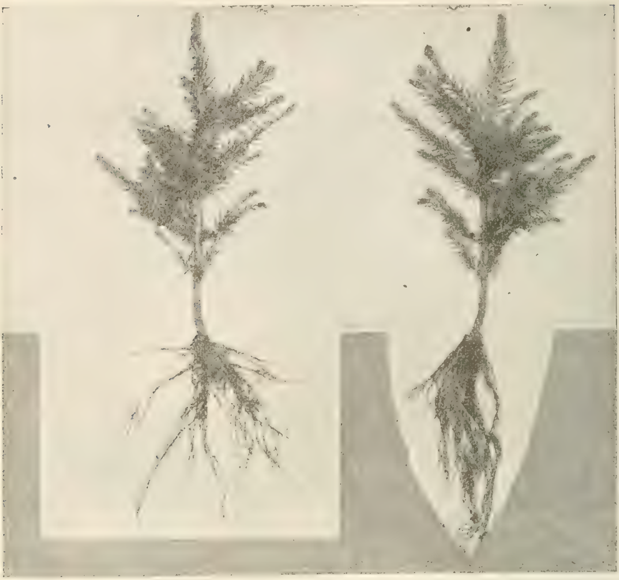


Fig. 3.—In planting, the hole should be made large enough to permit the spreading of the roots as shown at the left. A narrow, pointed hole, as shown at the right does not permit the spreading of the roots, and lessens the chances for successful planting.

bottom should be as flat as possible and not funnel shaped. This will enable the spreading of the roots, which permits the tree to draw moisture and food from a relative large area of the soil and, consequently, makes its chances better for quickly establishing itself. After spreading the roots out carefully, add fine black soil, a little at a time, and work it in carefully but firmly about the roots. When it is planted, the tree should stand at about the same depth as it stood in the nursery, or but very little deeeper. If the hole is too deep it should be filled in to the proper depth before the planting. Pack the soil well about the tree roots as the hole is filled but take care not to break or tear the roots. The surface of the soil about the tree should be left loose to prevent excessive evaporation of moisture from the soil, or better still, add a mulching of old leaves or straw for the same purpose. The placing of manure about the tree roots at the time of planting is likely to result in serious damage and is not recommended.

The tops of small evergreen trees should not be cut back or pruned unless to remove dead or injured branches.

Cultivation: Although the hardy evergreens will often survive if not given any cultivation after planting, their growth will be retarded by the presence of sod, weeds, and brush. In the case of the slow-growing evergreens which will not stand shading, the young trees may actually be killed by the overtopping of grass and weeds. In all cases, therefore, give the evergreen plantation frequent cultivation and continue until the trees are well established or until the branches interfere with the cultivation. Trees will respond to good cultivation the same as corn or garden crops and this point should not be overlooked.

Protection Against Live Stock: It is practically impossible to secure a good shelterbelt or woodlot unless all livestock are shut out from the planted area, at least until the trees are large enough to prevent serious breakage. Even then the trees may be injured, not only by the rubbing of the animals, but by their tramping and packing the soil about the roots. In a windbreak or shelterbelt it is generally desirable to have good protection against the wind close to the ground. Livestock in-

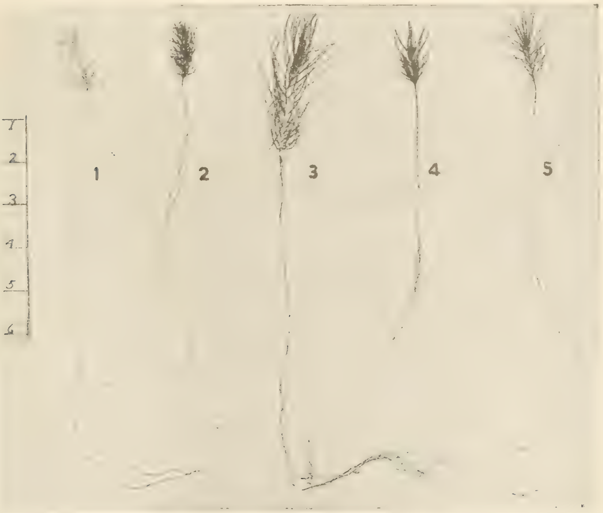


Fig. 4—1. Showing the root development of a Douglas fir seedling after one season's growth.

2. Showing the root development of a blue spruce seedling after finishing the first growing season.

3. A yellow pine seedling after the first season. The roots of this tree sometimes are 15 to 18 inches long after one season's growth.

4. White fir seedling after the first growing season. The firs and spruces tend to send out more lateral rootlets than the pines.

5. A jack pine seedling after one summer's growth.

variably damage the lower branches of the trees and thus make them less effective for shelter. Pasturing a newly planted evergreen shelterbelt should not be practiced under any conditions.

VARIETIES FOR IOWA PLANTING—WHITE PINE—(*Pinus Strobus*)

The Tree: The white pine is not only one of the most beautiful of the pines but is also one of the fastest growers. It is native to the northeastern part of the country, the Lake States, and extends as far west as Hardin county, Iowa. For planting its range has been very much extended. It will thrive on well-drained soil of almost any quality, but best on a light, deep sandy soil with a porus subsoil. It will endure dry situations and also very moist soils if not continuously wet. Open grown trees are generally very symmetrical in form. The fine foliage has a soft appearance when contrasted with other pines. Young trees will withstand shading for a few years but will not make a good growth in such situations. Trees planted under the shade of broadleaf trees in central Iowa, after seven years' growth, average about 18 inches in height while those planted under identical conditions, except that they were given full light, average about 7 feet in height.

The Wood: The wood is light in weight, soft, straight grained, only moderately strong, and will not warp badly. It is used very extensively for lumber, cabinet making, construction work, etc. The wood using industries of the state consume more white pine wood than any other one species.

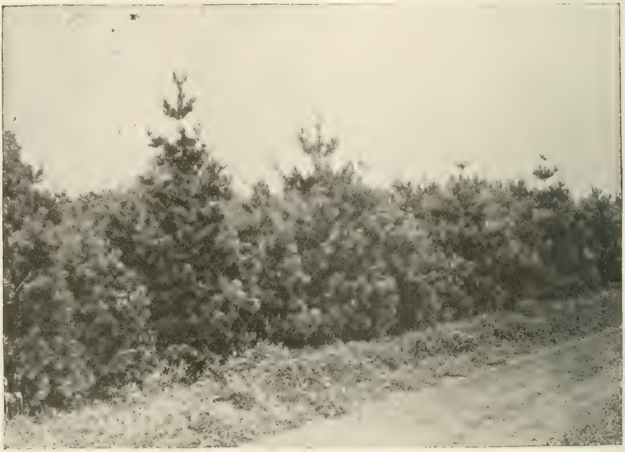


Fig. 5.—A ten-year-old shelterbelt of white pine. Some of the trees are 12 to 15 feet in height. This is one of the most desirable trees for shelterbelt planting.

Planting: For windbreaks and shelterbelts space white pine trees 8 to 10 feet apart in the rows, and the rows 10 to 12 feet apart. Use transplanted stock 6 to 18 inches high.

For woodlot planting space about 8 by 8 feet apart. For extensive work, use trees not to exceed 6 or 8 inches high. Plantations at 40 to 60 years of age in Iowa will produce 20,000 to 50,000 feet of lumber and yield good money returns. Commercial planting should be restricted to sandy or gravelly areas, steep slopes and isolated patches of land where agricultural crops can not be profitably grown.

For lawn or street planting the trees may be placed singly, or if the yard is sufficiently large, they may be grouped to present a larger and denser mass of foliage. For ornamental planting, it is generally not advisable to attempt to plant trees larger than 3 or 4 feet high, unless the planter is willing to go to an excessive expense.

For general planting in Iowa, the white pine is probably as valuable as any of the evergreen species and will be used extensively in the future.*

RED PINE (NORWAY PINE)—*(Pinus resinosa)*

The Tree: The native range of the red pine is much the same as the white pine, although it is not native to Iowa. Young trees grown in Iowa are very symmetrical in form, more stocky than the white pine and the foliage has a coarse appearance, due to the relatively large needles. The old bark is reddish brown in color. In its native range the trees often attain a diameter of 3 feet. In central Iowa, on good soil, the red pine equal the growth of white pine during at least the first ten years and probably for the first 15 or 20 years. The red pine will withstand a poor sandy soil, in fact, a poorer one than the white pine. Although it does best on a moist, porous soil, it will make a very satisfactory growth on relatively dry situations. The tree is more intolerant of shade than the white pine, and, consequently, should not be planted under the shade of other trees or along with other species which grow faster and may overtop it.

The Wood: The wood of the red pine is light, close grained, relatively hard and of a pale reddish color. It is of less technical value than the white pine, principally because of its dark color and greater hardness. It is used in general construction work, for box boards, lumber, piling and for numerous other purposes. In Iowa the consumption of this wood is much less than for the white pine.

Planting: The red pine has not been extensively planted in Iowa, but its worth should make it a desirable tree for many localities.

For windbreak and shelterbelt planting the tree equals in desirability the white pine except for the prejudice of some people against the coarse appearance of its foliage. Space the trees 8 to 10 feet in the rows and the rows 10 to 14 feet. One of the spruces (Norway or Black Hills) would make a good associate for the red pine if planted in alternate rows. The spruce being slower in growth and capable of withstanding shade, would serve to reinforce the somewhat open foliage of the red pine windbreak.

---

*Extreme care should be exercised to secure white pine stock only from nurseries or regions which are free from white pine blister rust. This rust is doing great damage to the white pine trees of eastern United States

For commercial planting the red pine probably ranks next to the white pine among the evergreens for lumber production. Plantations should be restricted to poor, sandy soils or such areas as are unprofitable for agricultural crops. The spacing should not be greater than 8 by 8 feet in order to shade off the lower branches as the trees mature.

The red pine has a place for ornamental planting in Iowa the same as the white pine. The coarseness of the foliage often makes a contrast which is highly desirable for ornamental purposes.

JACK PINE—*(Pinus divaricata)*

The Tree: The jack pine grows natively from Maine to Minnesota in the United States, but not in Iowa. In the forest the tree is not considered of much value, due to the fact that it is generally closely associated with the more valuable trees, white and red pines. Although usually of small size as compared with the other evergreen trees, this pine reaches a diameter of three feet and a height of 80 to 90 feet in good situations. Although very branchy and scrubby when grown in an open stand on poor soil, it is almost as straight bodied and free of side branches as the red pine when grown in even aged stands in the lake

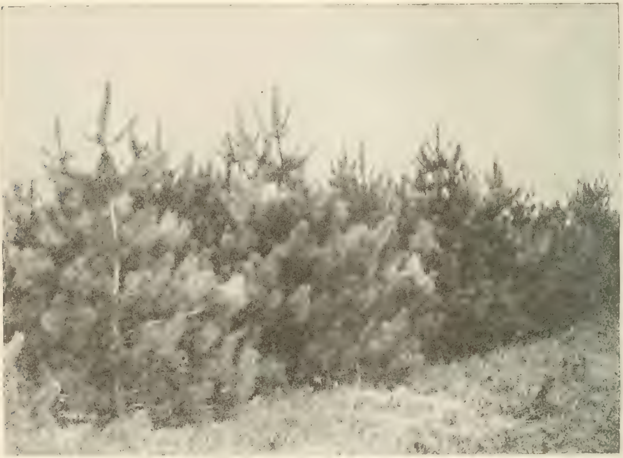


Fig. 6.—A thrifty young windbreak composed of red pine trees ten years old. The trees average about 10 feet in height. The red pine is one of the most desirable evergreen trees for planting in the state.

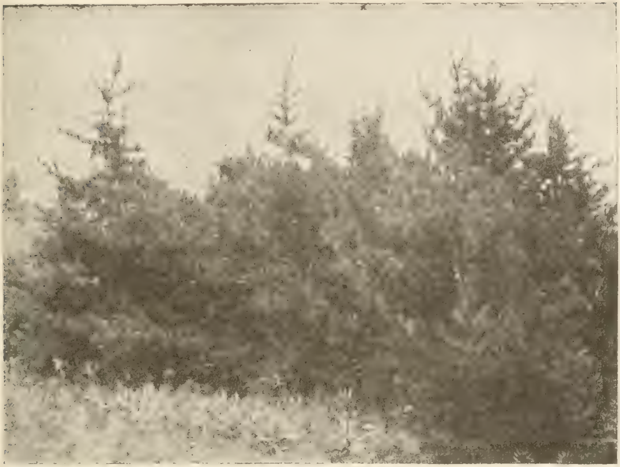


Fig. 7.—A ten-year-old windbreak of jack pine trees. Many of the trees are 15 feet in height.

states. The bark is dark reddish-brown and has a scaly appearance. The crown of the tree is very open and the foliage thin. The leaves or needles are generally less than two inches in length and have a light or yellowish green appearance. This pine will endure the poorest, sandy soil; in fact, it has been planted with success in almost pure sand and where the conditions during the growing season are dry and trying. Like other trees, however, its best development is obtained on a good, sandy loam soil. It is a short-lived tree, a rapid grower and a prolific seeder. In its native range it is one of the first trees to come in after the forest has been destroyed by fire. In central Iowa, on good soil, the jack pine makes a somewhat greater height growth than either the white or red pines during the first 10 or 12 years.

The Wood: The wood is weak, light, fairly hard and rather coarse grained. The lumber is generally knotty. The wood is not durable in contact with the soil. It is not used extensively for lumber except where more desirable woods are not available. The small trees make very satisfactory box boards and they may be used for fence posts if given treatment of creosote.

Planting: The jack pine is not recommended for general planting in Iowa, due to other more desirable species being available. Its persistence on poor, sandy soils and its rapidity of growth make it desirable for use in restricted localities.

For windbreak planting space the trees about 10 by 12 feet apart. For commercial planting give them close spacing of about 6 by 6 feet in order to have the trees shade off the side branches early in their growth. Because of the hardiness of this species, it is often possible to use seedling trees 8 to 12 inches in height, which can be grown in three years.

The jack pine has little value for ornamental planting, due to its thin foliage and somewhat scrubby appearance.

WESTERN YELLOW PINE (BULL PINE)—*(Pinus ponderosa).*

The Tree: The western yellow pine is a native of the western part of the United States. The range of one form of this pine extends as far east as South Dakota and Nebraska. The resistance of the tree to adverse climatic conditions has been largely responsible for the extension of its range by planting. It is found under a great variety of soil, moisture and climatic conditions. It makes a splendid lumber tree in the west coast mountains where there is an abundance of moisture and it is the only one of commercial importance in large areas of the dry southwest and eastern foothills of the rocky mountains.

The mature trees are large, sometimes reaching a diameter of 7 or more feet and a height of 200 feet. The bark on old trees has a distinctive yellow color and a plated appearance, while that on the young ones has a more blackish color. The trees are very intolerant of shade, except when young. The crowns are quite dense in youth but become more open as the trees increase in size. The foliage is coarse in ap-

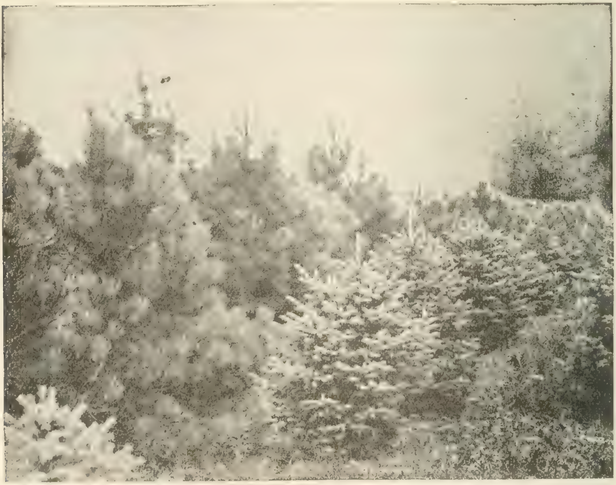


Fig. 8.—A windbreak composed of western yellow pine (left) and Black Hills spruce (right.) The trees are all about ten years old. Note the relatively slow growth of the spruce.

pearance and somewhat resembles that of the red pine. The needles are sometimes 8 inches in length.

This pine has been planted extensively in the western part of the country. The seedlings develop a long tap root and nursery stock, unless transplanted, is very difficult to handle successfully. The initial growth of this pine in central Iowa is considerably slower than the red pine but, without question, it will resist drier situations than the latter after being successfully planted.

The Wood: The wood is strong, rather light and is not durable, except after treatment with a preservative. The timber is one of those most extensively used for lumber.

Planting: The western yellow pine is very serviceable for windbreak and shelterbelt planting in Iowa. For this purpose the trees should be spaced from 10 to 12 feet apart in the rows. If more than one row is planted, it is often desirable to use also a second species, such as the Norway spruce, which might make up the interior portion of the windbreak. Use only well-rooted, transplanted stock from 8 to 12 inches in height. This variety is especially adapted to northwestern Iowa.

It is questionable if the western yellow pine should be used to any great extent for commercial planting in the state, since in most localities faster growing trees are available.

The tree is used extensively for ornamental planting. Open grown specimens are symmetrical and the coarse, long needles often give a pleasing contrast to the foliage of the broadleaf trees or other evergreens.

AUSTRIAN PINE—*(Pinus austriaca)*.

The Tree: The Austrian pine is a native of Europe but has been widely planted in the United States with splendid results. Iowa grown trees form a straight, stocky trunk with heavy limbs, when open grown. The branches do not appear in such distinct whorls as is the case with the white pine, consequently the ornamental value is somewhat less altho the tree has a beautiful dark-green, coarse foliage very closely resembling the red pine. The growth of the tree during the first ten years in central Iowa is more rapid than that of the western yellow pine; is less rapid than that of the white, red or jack pines, and is almost equal to that of the Scotch pine. In hardiness the tree compares favorably with the yellow and Scotch pines. Many growing specimens of this species thruout the state would indicate that the Austrian pine makes a good growth for 40 years or more, altho it is generally classed as a short-lived species.

The tree is a tap rooter and, as a result, is more difficult to handle in planting than those with a spreading root system. It is well adapted for planting in the drier portions of the state, although in these localities the growth is somewhat slower. It is a tree which thrives on rocky locations both in Europe and in this country.

The Wood: The wood is coarse, soft, rather brittle and of inferior value. It is not durable except after treatment with a preservative. The wood has been used very little in the United States, although if grown in sufficient amount would make a very satisfactory rough lumber which might be utilized for box boards, crating material or other purposes where great strength is not essential.

Planting: The Austrian pine has already been used to a considerable extent for windbreaks and shelterbelts in Iowa. It has invariably given good results. Like most of the pines, it is a light demanding tree and in planting with other species care should be taken not to overtop it with a faster growing species. For single or double rows the trees should be spaced 10 to 15 feet apart—close enough to interlace the branches somewhat. By spacing the rows from 12 to 15 feet apart, sufficient light will reach the trees for good growth. Seedling trees of this species have undesirable tap roots, consequently, for best results, use transplanted stock, preferably 10 to 12 inches in height.

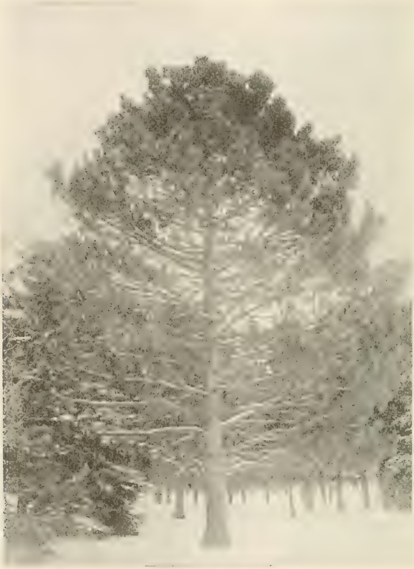


Fig. 9.—A single specimen of Austrian pine. A desirable tree for shelterbelt planting on dry situations.

The Austrian pine is not recommended generally for commercial plantations in the state, altho, like the western yellow pine, its peculiar qualifications make it desirable for use in restricted areas where other more desirable trees can not be successfully grown.

For ornamental planting, the growth, form of the trees and appearance of the foliage, place this species in the class with red and western yellow pine. The tree is very commonly used for lawn planting.

SCOTCH PINE—*(Pinus sylvestris).*

The Tree: Like the Austrian pine, the Scotch pine was brought from Europe for planting in this country. In Iowa it has been planted more widely than any other evergreen tree. In its native haunts, on good soil situations, it makes a fine tree of good form, but in Iowa a large majority of the trees show a crooked growth after they become 20 or 25 years old. It is commonly thought that the poor form of these trees has resulted from using seed which has been collected from the low formed trees in Europe. Altho the Scotch pine has been very serviceable in Iowa for windbreaks and shelterbelts, it is probable that a number of other evergreens would have given equally quick results and at the same time the trees would be much more sightly after reaching an age of thirty to forty years. On good soil situations the Scotch pine is slightly slower in growth than either the white or red pines during the first ten or twelve years. During the same period it slightly exceeds the Austrian pine in growth. As a rule, the Scotch pine planter dislikes the tree principally because of the crooked growth it makes. In the northeastern part of Iowa, or dry exposed situations, it can be used to advantage, altho the Austrian or western yellow pines should be given preference on difficult situations.

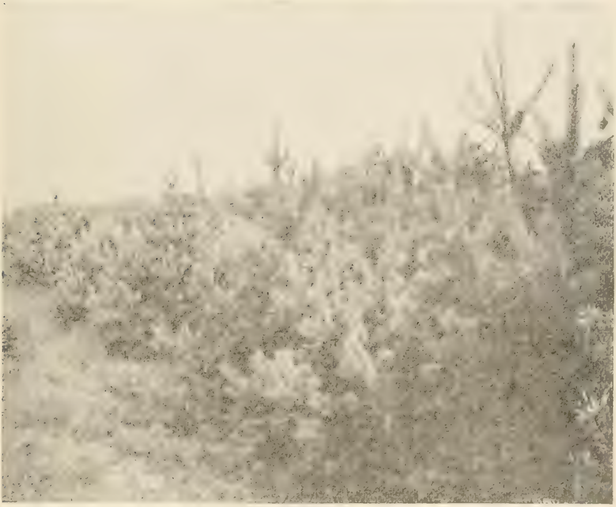


Fig. 10.—A ten-year-old windbreak of Scotch pine. Young trees of this species have a very good form but the older trees generally become crooked.

The Wood: The wood of Scotch pine is moderately light, soft, knotty, and is not durable. In Europe the wood is used extensively. In this country it has not been used enough to be considered. Because of the crooked growth it is not desirable for lumber or posts, but might be utilized for a quick fuel.

Planting: In planting the Scotch pine for windbreaks place the trees about 10 feet apart in the rows and give them an abundance of light from the side in order to permit the development of side branches. If used for shelterbelts, the rows of Scotch pine might be supplemented with several rows of Norway or Black Hills spruce. This would very materially increase the efficiency of the windbreak, since the spruces have denser foliage than the pine. The tree is of practically no value for commercial plantations.

As is true with the evergreen windbreaks, the Scotch pine has been used as commonly as most any other evergreen for lawn planting. Small trees of this species make a very pleasing appearance on the lawn and many prize the older trees for their pronounced bright yellowish-red bark. The thinness of the foliage prevents the shading out of grass on the lawns.

EUROPEAN LARCH—*(Larix europea.)*

The Tree: The European larch, which closely resembles the American larch or tamarack, is a native of Europe. It is one of the evergreen class which is not evergreen—that is, it sheds its leaves annually the same as the common broadleaf trees. The fact that the trees are deciduous restricts their use for windbreak purposes, since they give no more winter protection than the broadleaf trees. Unlike a number of the evergreens planted in Iowa, the European larch requires a favorable soil situation for good growth. The soil should be light, deep, moderately fertile and well drained. The trees will withstand very little shading and it is classed as one of the trees most intolerant in this regard. The larch is a fast grower. In central Iowa, plantations 35 to 40 years old average about 10 inches in diameter and 50 to 70 feet in height. The plantations are characterized by the straightness of the trees and the slight taper of the stems. Trees which once become overtopped, become badly suppressed and soon die.

The Wood: The wood of this larch is hard, strong, flexible and quite durable in contact with the soil. The tree is especially valuable for poles and fence posts. The straightness of the timber increases its value for these purposes. The wood is also serviceable for cross ties.

Planting: This tree is one of the first to bud in the spring. On this account it is important to plant the trees as soon as possible after the ground can be worked.

Altho the larch is seldom used for strictly windbreak purposes, plantings of this species are often combined in a shelterbelt and woodlot. When planted in pure stand the trees should be placed about 6 feet apart in the rows and the rows 7 to 8 feet apart. A relatively close spacing is necessary in order to shade out the grass and weeds. On good soil situations pure plantations can be grown to pole size without underplanting with a shade enduring tree. Plantations in central Iowa, when 40 years old, will produce 200 poles averaging 9 inches in diameter at the bottom and 1000 posts per acre. After 25 to 30 years it is practically impossible to keep out grass and weeds in a pure plantation of larch. An underplanting of spruce or some other tolerant species would undoubtedly benefit the stand.

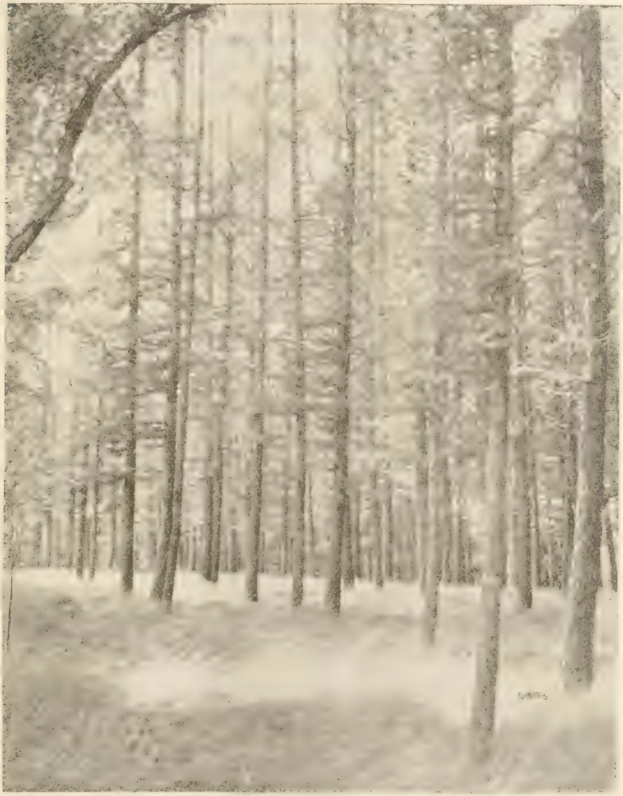


Fig. 11. A plantation of European larch in central Iowa. The trees are 40 years old and the larger ones are about 12 inches in diameter. Note the tall, straight growth and the thinness of the foliage. Plantations of this kind should be underplanted.

For ornamental purposes the European larch makes one of the most beautiful lawn trees. Altho it does not hold its leaves over winter, the light green of the new foliage, which appears early in the spring, gives a very pleasing effect. For ornamental planting, use trees 3 to 4 feet high. For the woodlot, transplants 10 to 12 inches high, which are three to four years old, are of a convenient size and more economical.

NORWAY SPRUCE—*(Picea excelsa)*.

The Tree: The Norway spruce is not native to North America but has been introduced from northern Europe and Asia. The tree develops a straight trunk and a pyramidal crown which becomes rounded at the top as the tree becomes old. In a dense stand the tree retains its pyramidal form but the living portion of the crown is restricted to the upper part of the trunk. The slender branches become more or less pendulous as the tree increases in age, which makes it valuable for ornamental planting. The tree reaches a good size in Iowa even on upland soil. For the higher situations where there is plenty of moisture, this spruce is much more valuable than the white or Black Hills variety, due to its more rapid and thrifty growth. This species will not endure a very dry soil but will thrive on one of moderate fertility if surface moisture is available for the shallow root system.

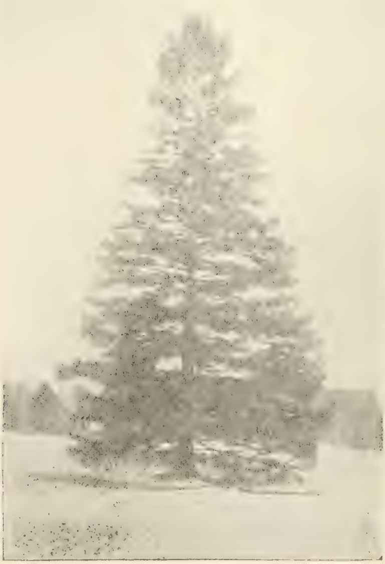


Fig. 12.—The Norway is the most desirable spruce for windbreak and shelterbelt planting in Iowa. Open grown trees are very desirable for lawn planting.

The tree will withstand wet situations but not stagnant or swampy areas. The growth during the first 10 or 12 years is rather slow but the rate increases after that time and continues until the trees are about thirty-five years of age. The length of life when grown in Iowa under good conditions is not definitely known.

The Wood: The wood is light, soft, non-resinous and moderately durable. It has been little used in this country because it has not been extensively planted for commercial purposes. In Europe it is used very commonly for lumber, paper pulp, and fuel. Bcause of the persistence of the side branches even in a dense stand, the lumber is generally knotty.

Planting: The Norway spruce is one of the most efficient of the trees used for windbreaks in Iowa. It has a rather dense foliage and the branches remain intact for a number of years, even in a relatively dense shade. Space the trees about 10 by 14 feet apart, when so placed, a very effective windbreak is produced in a few years. A desirable combination is to alternate rows of white cedar and Norway spruce.

For commercial planting, an 8x8 foot spacing is desirable. The presence of side branches on trees grown in an open stand, decreases the technical value of the lumber produced. Three to five year-old transplanted stock is proper for windbreak or woodlot planting. Because of the compact root system the trees are easily handled in the planting operation.

For lawns, the Norway spruce is one of the most beautiful trees available for Iowa. The drooping branchlets on trees thirty to forty years old make them very attractive.

The tree is suitable for planting in all portions of Iowa except the drier, more exposed localities in the northwestern part.

RED CEDAR (JUNIPER)—*(Juniperus virginiana)*.

The Tree: The red cedar is one of the most widely distributed of the American evergreen trees. It is native to Iowa and has in the past been found in considerable quantities along the rivers in the eastern part of the state. The native timber has been cut for fence posts and few of the original trees remain. Open grown trees on good soil are spire shaped while those grown on exposed, wind swept situations are more scrubby and irregular in growth. It is one of the least exacting of the American trees in regard to soil and climate conditions. It is found on soils ranging from the best to those of poor quality in the semi-arid regions of the country. On wet soils the growth is retarded. The tree seldom attains a height greater than 50 feet in Iowa. The crown is less dense and the rapidly tapering trunk is generally more or less fluted at the base. Full sunlight is required for best development, although the trees in central Iowa make a height growth of 25 to 35 feet in 30 years. It is classed as strong grower. In native groves the trees reproduce under the shade of broadleaf trees.

The Wood: The red cedar or juniper wood is one of the most durable of the American woods. It is light and soft with a fine compact grain. A freshly cut piece of heartwood has a deep red color which fades on exposure. The sapwood is cream colored and is not durable. Fence posts cut from trees of this species have been used very extensively over the country and are still much in demand although the scarcity of the timber makes them expensive. Average posts will last from 30 to 35 years under Iowa conditions. The trees are also used for poles. In southeastern United States the wood has been used extensively for pencils.

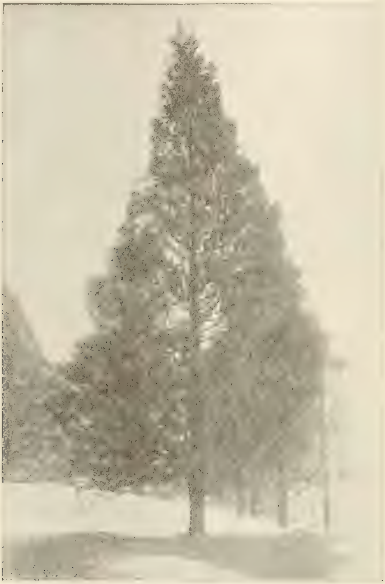


Fig. 13.—The red cedar. This tree is desirable both for lawn planting and for the windbreak. It should not be planted near the apple orchard because of a fungus trouble.

Planting: The value of red cedar for planting lies in the adaptability to unfavorable soil and climatic conditions and also to the durability of the wood but not to its rapidity of growth.

This tree has been used widely for windbreaks especially in single rows and very desirable for this purpose, however because of its slowness of growth, it does not give good protection for a number of years. For single rows, space the trees 8 feet apart. It is generally desirable to plant a fast growing tree along with the red cedar, for giving quick protection, which can be removed when the cedars become effective.

The tree is seldom planted for strictly commercial purposes. A combined woodlot and shelter belt might serve as a source of fence posts. The value of the red cedar for ornamental purposes is well recognized. Open grown trees in Iowa are very symmetrical. The light bluish berries add a feature of attractiveness. The trees stand pruning and trimming well but not so well as the arborvitae or white cedar.

Trees one foot in height or under should be used for windbreak, shelterbelt or woodlot planting. Generally trees 2 to 3 feet in height are preferable for lawn planting.

One of the greatest disadvantages of planting this tree in Iowa comes through the development of the "cedar-apple" fungus when in close proximity to apple trees. For this reason the red cedar should not be placed near the orchard.

BLACK HILLS SPRUCE (WHITE SPRUCE)—*(Picea canadensis)*

The Tree: The Black Hills spruce is a variety of the eastern white spruce which has been introduced from the Dakota region. When grown in the prairie region it is small in size, of pyramidal form, and has a well developed root system. Although in its native habitat it is generally found on moist situations, it has been found to be very drought resistant, and, for this reason, is a valuable tree for planting, especially in northwestern Iowa. It is a tree which resists to a marked degree the drying effects of the winter winds. In planting, it is quite easy to handle because of the compactness of its root system.

The Wood: The wood is soft, fine grained, light, and not strong nor durable. The timber makes a satisfactory lumber of a poorer grade. It is desirable for box boards, crating material and for paper pulp. The trees can be utilized for fence posts after being treated with a preservative but should not be planted for this purpose alone.

Planting: In localities to which it is adapted, the Norway spruce is to be preferred for windbreak planting to the Black Hills variety. The former is not only a fast grower but also makes a larger tree. In addition, the Norway spruce is preferable for ornamental planting. On dry, exposed, wind swept areas, especially in northwestern Iowa, the Black Hills spruce is a tree of considerable importance. Because of its slowness in growth, windbreaks of this species should be reinforced, at the start at least, with a row or two of some fast growing tree such as the cottonwood. The spruce will endure the shade of the cottonwoods and after reaching a fair size the cottonwoods, or a part of them, may be removed to permit the full development of the spruce. This tree may also be planted along with the western yellow, Austrian, Scotch or jack pines. In such combinations the shade enduring spruce should make up the interior rows and the intolerant pines the outside rows.

This spruce has but little value for commercial plantations, since other hardy species are available which are much faster in growth and produce a product of equal or greater value.

For ornamental planting the Black Hills spruce is important for dry, exposed situations.

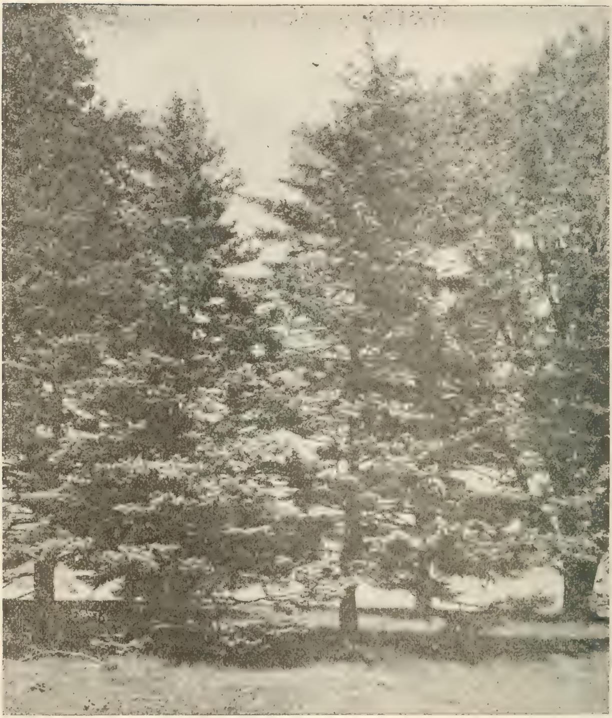


Fig. 14.—Black Hill spruce trees on upland soil. These trees are between 30 and 40 years old and have a height of about 30 feet.

WHITE CEDAR (ARBORVITAE)—*(Thuja occidentalis)*

The Tree: In the United States the arborvitae or white cedar is native from the northeastern part of the country to central Minnesota. It is generally found in the so-called "cedar swamps" or on moist situations. Well developed trees in the open have a beautiful pryamidal crown. The leaves are very small and are arranged in broad flat sprays. In central Iowa upland grown trees are very slow in growth and before reaching an appreciable size gradually die out. In lowland situations where the water table is close to the surface, the trees are very satisfactory for Iowa planting. They will withstand wet soil and make a good growth if the water is not stagnant. The white cedar makes one of the most effective windbreak trees. It stands considerable shading, consequently can be grown closely spaced.

The Wood: In the United States the white cedar is used for fence posts and poles probably as much as any other tree. The native stands are dense and a large production of these products per acre is obtained. Practically all of the fence posts shipped into the State are white cedar. The tree is utilized little for other purposes.

Planting: The white cedar windbreak should only be planted on moist soil. Space trees about 8 by 12 feet apart. With this spacing the lower branches on the interior of a windbreak thirty years old are shaded off but the outside rows present a solid mass of green foliage. The Norway spruce is sometimes planted in alternate rows with the white cedar and this combination makes a very desirable windbreak, although after twenty-five to thirty-five years the former begins to overtop the cedar. At this time the white cedar trees could profitably be taken out and made into fence posts—thus giving the remaining spruce more room for development.

For commercial planting the white cedar could be well utilized on wet land. It should produce a crop of fence posts in 15 to 20 years but would give best returns if permitted to grow for 30 to 40 years, since the initial growth is slow. In planting use trees 8 to 12 inches high.

This cedar is very much prized for ornamental planting on lawns. It trims back readily and is used much for low hedges, although foreign varieties are more adaptable for this purpose but are not as hardy. For lawn planting, trees up to 3 feet in height can be satisfactorily planted if given good care.

HEMLOCK—*(Tsuga canadensis)*

The eastern hemlock is a native to the northeastern United States and extends as far west as the Lake States. It is a very desirable tree for ornamental planting, due to its symmetry and to the graceful, drooping, soft foliage. It is suitable for planting on moist situations but is difficult to establish on upland soil where it is exposed to the summer winds.

The tree has little value for commercial plantations, because of the inferior quality of the wood. It is occasionally used for windbreak planting.

DOUGLAS FIR—*(Pseudotsuga taxifolia)*

The Douglas fir is native to the Rocky Mountain region and western United States. Individual trees in Iowa appear to be quite hardy. The new leaves, especially on young trees, are frequently killed by late spring frosts. On this account young trees are often of undesirable shape and poor in appearance. The tree has value for ornamental planting and possibly for windbreaks but is not recommended for general planting except in moist, protected situations.

AMERICAN LARCH (TAMARACK) *(Larix americana)*

The American larch or tamarack is a northern species. It is generally found on wet situations within its native range. In Iowa, occasional specimens are found planted on upland soil. The tree closely resembles the European species which is much more commonly planted. For orna-

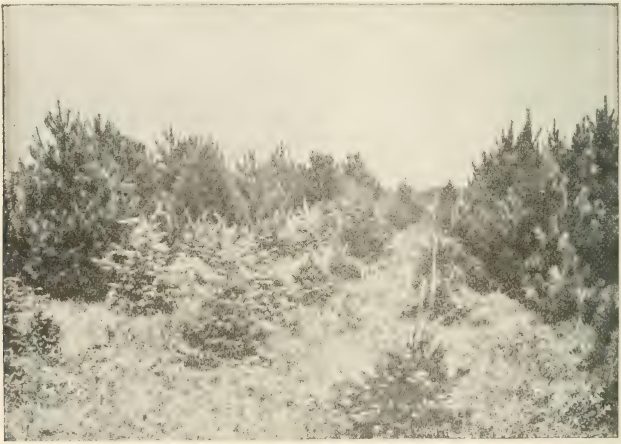


Fig. 16.—A young windbreak of Austrian pine (left), Douglas fir (center) and red pine (right). All the trees are about ten years old. Note the relatively slow growth of the Douglas fir.

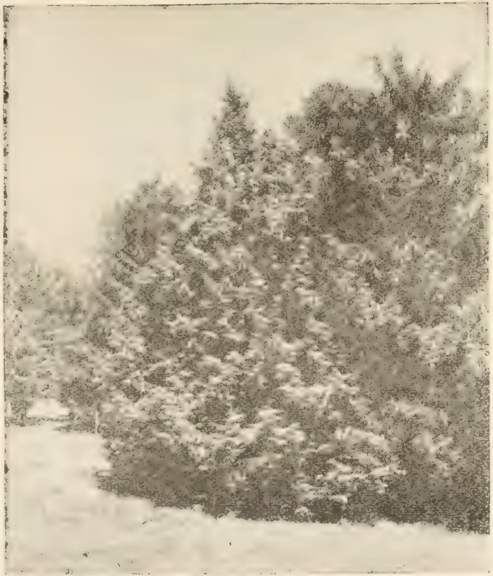


Fig. 17.—Eastern hemlock (left) and Norway spruce (right). Aside from lawn planting, the hemlock might be used effectively in a windbreak where there is plenty of soil moisture.

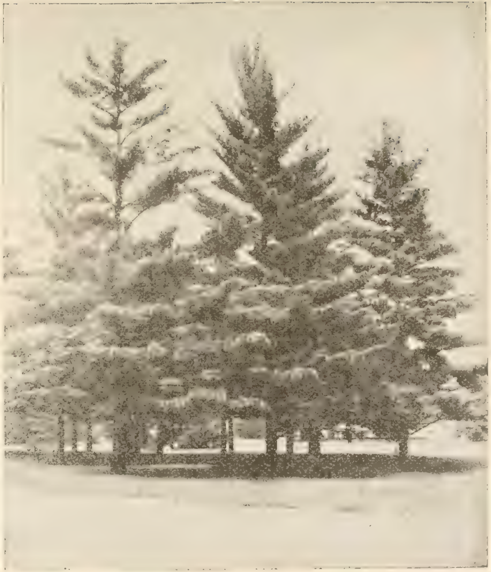


Fig. 18.—A clump of white pines about 25 years old. The rapidity of growth, hardiness, and beautiful appearance of this tree make it one of the most desirable for planting.

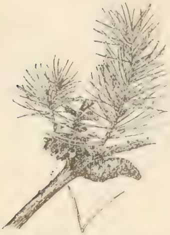
mental purposes it ranks with the European variety except that it is not so rapid in growth. The tree might be utilized for planting for commercial purposes on wet soils, but the white cedar is more valuable for such areas.

COLORADO BLUE SPRUCE—*(Picea parryana.)*

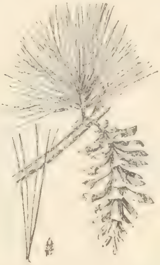
In Iowa this spruce is planted for ornamental purposes but has value for shelterbelt planting as well. Desirable trees have almost a perfect conical form and the foliage varies from green to a distinct bluish white color. They are very much prized for decorative purposes. The tree is hardy in all parts of the State.

WHITE FIR (SILVER FIR)—*(Abies concolor)*

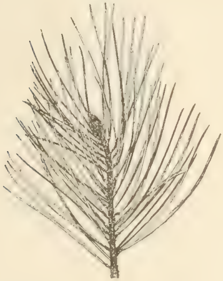
Like the blue spruce, the silver fir is planted only for decorative purposes in Iowa. The trees are very symmetrical and the foliage has a silvery white appearance which makes it highly prized for lawn planting. The tree is considerably less hardy than the blue spruce and should not be planted in exposed, dry situations.



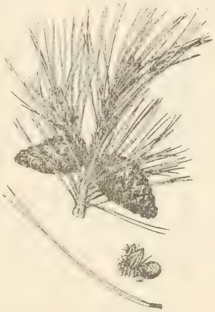
Jack Pine. Leaves in pairs ¾ to 1½″ long. Cones woody, 1½ to 2″ long, with compressed scales.



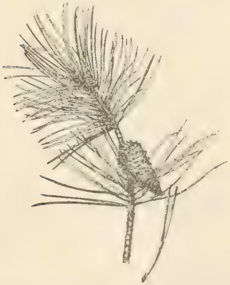
White Pine. Leaves from 3 to 5″ long in bundles of 5. Cones are from 5 to 11″ long.



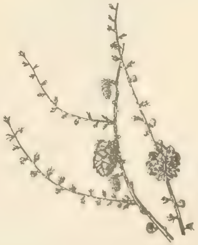
Western Yellow Pine. Leaves in clusters of 2 or 3′. and 5 to 11″ long. Cones woody, oval in shape, 3 to 6″ long.



Austrian Pine. Leaves in pairs, 3½ to 5″ long. Cones woody, 2 to 3″ long.

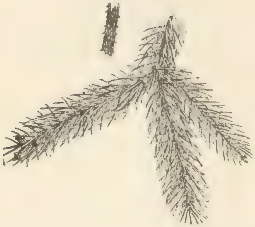


Scotch Pine. Leaves in pairs, 2 to 3½″ long. Cones woody, 1½ to 2½″ long.

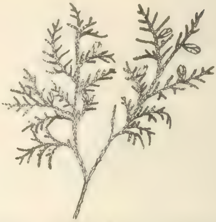


European Larch. Leaves in tufts ¾ to 1½″ long, dropped in autumn. Cones ¾ to 1½″ long.

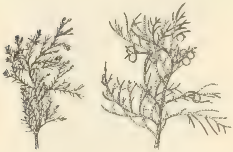
PLATE I—Leaves and fruit of evergreens.



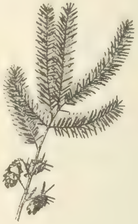
Norway Spruce. Leaves angular, sharp pointed. Cones 4 to 7″ long.



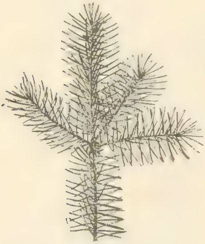
White Cedar. Leaves scale like or sometimes nearly ¼″ long. Cones 1/3 to ½″ long, composed of only a few scales.



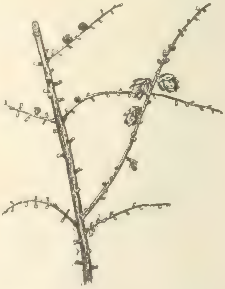
Red Cedar. Leaves scale like, on young trees, ½ to ¾″ long. Fruit berry-like, ¼ to 1/3″ in diameter, dark blue to bluish-white color.



Eastern Hemlock. Leaves 1/3 to 2/3″ long, oblong, rounded tip. Cones ½ to ¾″ long.



Douglas Fir. Leaves ¾ to 1¼″ long. Cones semi-woody 2 to 4½″ long with bracts protruding from between the scales.



American Larch. Leaves in tufts about 1″ long. Cones ½ to ¾″ long with about 20 scales.

PLATE II—Leaves and fruit of evergreens.

EVERGREEN TREES FOR VARIOUS PURPOSES IN IOWA.

FOR WINDBREAKS AND SHELTERBELTS.

White pine
Red pine
Jack pine
Western yellow pine
Austrian pine
Scotch pine
European larch
Norway spruce
Red cedar
Black Hills spruce
White cedar

FOR DRY SITUATIONS.

Austrian pine
Black Hills spruce
Western yellow pine
Jack pine
Scotch pine
Red cedar.

FOR MEDIUM TO FAIRLY MOIST SITUATIONS.

White pine
Red pine
Norway spruce
Austrian pine
Western yellow pine
European larch
Black Hills spruce
Red cedar
White cedar
Scotch pine
Hemlock
Douglas fir
Colorado blue spruce
White fir

FOR WET SITUATIONS.

White cedar
American larch
Black Hills spruce (to a less degree)

FOR SOILS OF POOR QUALITY (Sandy, gravelly, rocky, etc.)

White pine
Red pine
Western yellow pine
Austrian pine
Red cedar
Jack pine
Scotch pine

FOR SOILS OF GOOD QUALITY.

White pine
Red pine
European larch
Austrian pine
Norway spruce
Western yellow pine
Scotch pine
Black Hills spruce
Red cedar
Jack pine
White cedar
Hemlock
Douglas fir
Colorado blue spruce
White fir
American larch

WINDBREAKS AND SHELTERBELTS.

White pine
Norway spruce
Red pine
White cedar
Black Hills spruce
Austrian pine
Hemlock
European larch
Western yellow pine
Red cedar
Scotch pine

FOR THE PRODUCTION OF LUMBER.

White pine
Red pine
Norway spruce
Austrian pine
Western yellow pine

FOR THE PRODUCTION OF FENCE POSTS.

White cedar
European larch
Red cedar
White pine (if treated)
Other pines (if treated)

FOR THE PRODUCTION OF POLES.

European larch
White cedar
Red cedar
White pine
Norway spruce

FOR PLANTING IN SHADE.

Hemlock
Norway spruce
White spruce
Colorado blue spruce
White cedar
Red cedar

TREES REQUIRING FULL SUNLIGHT.

European larch
American larch
Western yellow pine
Red pine
Jack pine
Scotch pine
White pine (stands some shade when young)

FOR LAWN PLANTING.

Colorado blue spruce
White pine
Norway spruce
Hemlock
White fir
European larch
White cedar
American larch
Red cedar
Black Hills spruce
Douglas fir
Red pine
Austrian pine

SILAGE AND SILAGE FERMENTATION.

BY A. R. LAMB.

Bulletin No. 168, Iowa College of Agriculture.

There would be much less spoilage and waste of silage if the more than 22,000 farmers in Iowa who put up this valuable feed understood just what happens in the fermentation process, instead of following directions in "cook book" style. There would also be more use of other crops than corn for silage, especially in cases of emergency, if the merits of some of them for this purpose were known. Conditions are not always normal and favorable for the best results in making silage, and a knowledge of the principles upon which the proper preservation of silage depends is of considerable value when conditions are unusual. A great deal of uncertainty about silage fermentation still exists. This is evidenced by the number of samples of moldy silage sent in to the Iowa Agricultural Experiment Station and by the incorrect ideas regarding the fermentation that are still current.

Investigations and experiments carried on at the Iowa Agricultural Experiment Station during the past six years, as well as at certain other stations, have cleared up a number of doubtful points concerning silage fermentation and disposed of a great deal of the "guess-work" in the discussion of silage problems. Some of the results of that work as to what silage fermentation really is, the causes of the fermentation, and the adaptability of soft corn ears, alfalfa, rape, and other crops to the making of silage, are presented in this bulletin.

THE FERMENTATION OF SILAGE.

Certain other well-known fermentative processes are somewhat similar to silage fermentation. When hay is stored too green it is likely to heat, even to the combustion point. This heat is only the outward evidence of other changes which are taking place in the hay. Grain stored in bins undergoes certain chemical changes, which sometimes develop a noticeable amount of heat. These and similar changes, which are undergone by all living plant material when stored in large masses, are in some respects like silage fermentation. The fermentation of sauer kraut is also similar in that the preservation of the kraut depends upon the formation of organic acids by bacterial action. The formation of vinegar from cider involves the production of acetic acid, which is one of the acids found in silage. This change takes place necessarily in the presence of air. On the contrary, the changes which are normal to the formation of food silage take place entirely in the absence of air.

In silage making, the chopped corn forage is tightly packed into an air-tight silo, with plenty of moisture present, and fermentation begins at once. The first evidences of change are a slight rise in temperature

---

*Since corn (maize) is the principal silage crop in this country, all references to silage will be understood as being to corn silage unless otherwise stated.

and the evolution of carbonic acid gas.* The temperature of the silage rarely exceeds 85° to 90° Fahrenheit, except near the surface, where fermentative processes are greater, owing to the presence of air. Erroneous ideas regarding the importance of the heating in silage fermentation were derived from observations made only on the surface of the silage. The oxygen in the silage is used up early in the process of fermentation or driven out by the carbonic acid gas. *From this point the presence of air or oxygen is fatal to the proper preservation of the silage, because air permits the development of molds*, which are themselves sometimes poisonous, and which quickly destroy the acids and thus allow the silage to spoil. The importance of air-tight walls and proper packing down of the silage to keep out the air is, therefore, at once apparent.

THE FORMATION OF ACIDS.

The next changes noticed during the silage-making process are a change in color, and the development of a more or less pleasant aromatic odor and a sour taste. The color and odor are characteristics of silage and are of considerable value in judging its quality; but the most important change is the formation of acids, which cause the sour taste. The acids formed are chiefly lactic acid, which is the acid found in sour milk, and acetic acid, the acid of vinegar. The total amount of acid formed averages between 1 per cent and 2 per cent of the weight of the silage. This change is important because it indicates that the fermentation is healthful, like the ripening of cream or the formation of vinegar, instead of being a state of unhealthful decay, like the putrefaction or spoiling of meat. In the presence of this acid fermentation it is impossible for the bacteria which cause decay to live and work, unless the presence of air should allow the growth of molds, which in turn destroy the acids, and thus allow the putrefactive bacteria to thrive. This last process is what occurs in the top layer of the silage in the silo, which is spoiled because of the presence of air. The formation of acid is, therefore, one of the most important of the changes which take place in the fermentation of silage.

THE FORMATION OF ALCOHOLS.

Other changes occur in the process which are not appreciable to the senses, and which can generally be detected only by chemical analysis. One of these is the formation of a small amount of alcohols, chiefly ordinary or grain alcohol. The total amount of alcohols generally varies between 0.1 per cent and 0.4 per cent of the weight of the silage, or as much as 0.5 per cent of the juice. The source of the alcohols, as well as of the acids, is the sugar originally present in the plant. Experiments conducted by the writer show that the amount of sugar which disappears is almost exactly equivalent to the amount of alcohol and acid formed. About one-half of the sugar present is ordinary cane sugar. This is first broken up into simpler sugars, such as glucose, and then the simple sugars are changed into alcohol and acid.

---

*This gas is generally known to be poisonous, but accidents still occur occasionally when the gas, which is heavier than air, collects in a partially filled silo. If a lighted lantern is lowered into the silo is extinguished, it is almost certain death to enter before the gas has been driven out by starting the silo-filler or by opening a door near the surface of the silage.

Other recent experiments show that the amount of simple sugars in the silage is at first increased by the breaking up of some of the starch; but the total amount of sugar present, after fermentation is over, is much less than in the green plant material. Sometimes practically all the sugar is used up. The amount of sugar in the green plant, and, therefore, the amount of acid in the silage, depend upon the maturity of the plant when harvested. The amount of sugar in the plant decreases as the plant approaches maturity.

Another characteristic change is the breaking down or digestion of protein matter, or the flesh-building constituent of foods. This merely anticipates some of the digestive processes in the ailmentary tract of the animal which eats the silage, and therefore does no harm, since little or no nutritive value is lost.

THE CHANGES COME RAPIDLY.

These various changes take place with the greatest rapidity during the first five days, and are practically complete at the end of 10 or 12 days. The writer measured the amount of carbonic acid gas produced in several instances, and found that the rate at which the gas was produced was always greatest during the first 24 hours after the corn was put into the silo. The development of heat at the surface of the silage and some of the changes in the sugar are generally most rapid in the first day or two, while the formation of acid is often more rapid somewhat later, or during the second, third, and fourth days. After the fermentative changes which have just been described are finished, or after the first two weeks, there is practically no further change in the silage. Silage has been kept for years in a tight silo without losing either its palatability or its value.

The losses which occur during the fermentation process are appreciable, but can be greatly reduced by taking proper precautions, especially by making the silo absolutely tight, including the bottom, and by covering the top with well-packed straw, stover, or other materials. These losses are more than made up for by the increased efficiency of the feed.

THE CAUSE OF SILAGE FERMENTATION.

Ever since silage was first made, there has been doubt about the causes of these important preservative changes in the fermentation of silage. At first, bacteria were thought to be responsible, as in the case of vinegar. Later, other investigators claimed that the cells of the plant itself carried chemical substances called enzymes,* which were the only agents actually concerned. Other writers have taken one side or the other on the subject.

---

*Enzymes are substances produced by living cells of plants and animals, which carry on the life processes of the plant or animal. For example, enzymes in the stomach and intestines of animals digest its food, and enzymes in the corn plant cause it to grow.

The greater part of the past two years has been spent by the writer in an effort to settle this much discussed question. The results obtained show definitely that neither bacteria alone nor plant enzymes alone are responsible for the fermentation of silage.†

It has been found that a plant enzyme digests the starch and gives a preliminary increase in some cases to the sugar content. Another enzyme breaks down cane sugar into simple sugars. The acid-forming bacteria are the agents which form most of the acid from the sugar. This statement is supported by the fact that bacteriologists have found large numbers of acid-forming bacteria in silage. Part of the alcohol is formed by the plant enzymes and more alcohol is formed later by yeasts,‡ which are microscopic one-celled plants like bacteria. Some of the protein is digested by plant enzymes and some by bacteria. Both plant enzymes and bacteria seem to have a share in the production of the heat which raises the temperature of silage. The evolution of carbonic acid gas, which is formed in such large quantities at the beginning of the fermentation, seems to be due largely to the plant enzymes, although the bacteria and yeasts doubtless furnish part of it.

Direct evidence has been found of an enzyme called invertase which hydrolyses or breaks down cane sugar, and of an enzyme called zymase, which forms alcohol from sugar. Other investigators have found enzymes in the corn plant which act on sugar and on proteins. Enzymes of similar nature have been found in practically all plants, as they are the agents which promote plant growth. Additional evidence has been obtained by fermenting silage and even corn juice in the presence of antiseptics, showing that plant enzymes are active in silage fermentation, but that they are not the only active agents in the process.

SOFT CORN EAR SILAGE.

In the fall of 1915, the unusually large amount of "soft corn" that was harvested, owing to the unfavorable season and early frosts, presented a rather difficult problem in Iowa. Much of the corn grain was so immature and contained so much moisture that it could not be safely cribbed, but would mold and be a total loss unless preserved in some way. The proportion of the average total crop that could be preserved in the ordinary way in the available silo space was small. Therefore the question arose as to the possibility of preserving the ears alone in the silo, without the stover.

The writer, in cooperation with John M. Evvard, assistant chief of the animal husbandry section of the Iowa Agricultural Experiment Station, ensiled soft corn ears successfully in small laboratory silos. Silage made in these silos is identical in quality and composition with properly made silage in a farm silo. The ears, which were in late roasting stage, were husked, run through a silage cutter which cut them into one-half and one-inch pieces, and tightly packed into large cylindrical glass jars.

---

†A detailed account of these experiments is to be published later.

‡Yeasts are the cause of ordinary alcoholic fermentation in beer and wine.

A small amount of water was added. The silage resulting was of excellent appearance and odor, clean, free from mold, and palatable. There was quite enough sugar in the grain and cobs to furnish enough acid to preserve the material, although the acidity developed was not as great as in ordinary corn silage. One jar of this silage has now been kept in perfect condition for more than a year.

It is indicated by these experiments that in the event of another unfavorable season or early frost, a great deal of valuable corn grain could be saved by ensiling the ears alone. In this way the softer corn may be preserved in a clean and palatable condition, and the most nearly mature corn may be allowed to dry out in the field until dry enough to crib. However, the very softest corn had better be fed at once, since the weight of the silage will crush corn that is too soft. It is considered a good plan to ensile the husks with the ears since the husks tend to tie the mass together. In contrast to ordinary corn silage, it must be remembered that this silage is a concentrate and not a roughage. For this reason soft corn ear silage can be used to considerable advantage in feeding swine, while ordinary corn silage contains too much roughage for them.

PRECAUTIONS WITH SOFT CORN.

If it is desired to make this kind of silage, the following precautions must be observed.

1. Chop quite finely. No pieces should be over an inch across, and the smaller the better, within reasonable limits.
2. Pack tightly by tramping well, especially near the walls.
3. Add water. This is best done by adding slowly during the filling, being careful not to add an excess so that the water collects at the bottom of the silo. It is well to have a small opening at the base of the silo, which will indicate when there is an excess of added water. In general, late roasting corn will require about a ton of water to every 6 or 7 tons of silage corn. Less mature corn may not require any water.
4. Cover the filled silo with some cheap material such as stover or straw, in order to avoid the loss by spoiling of a layer of good concentrated feed.
5. It is best not to have too large a proportion of nearly mature ears, because the hard cobs prevent packing, and also because the mature corn may not contain enough sugar to furnish the necessary acid to preserve it in the silo.
6. Snapped corn or ears plus husks, may be used in this manner to better advantage than husked corn.
7. Of course moldy corn should not be put into the silo, but corn in good condition, ensiled carefully in a tight silo is perfectly safe from mold.

Silage made from the immature whole plant is generally of poor consistency, too sour, too high in moisture, and otherwise unsatisfactory. Its feeding value is much less than that of mature corn, because the amount of nutrients stored in the corn plant increases continually up to the ensiling time. The loss during the fermentation is also greater, on account of the larger amount of sugar in the plant at this stage and the consequent greater production of acid and carbonic acid gas.

It is better, therefore, to leave corn in the field as long as possible, even until after frost, rather than to ensile it too soon. Corn which has been absolutely frozen will make good silage, as freezing will not destroy the enzymes, and there will be plenty of opportunity for the entrance of acid-forming bacteria during the silo filling. Of course the corn must not be left in the field so long after being killed by frost that it begins to mold, or the leaves become so dry that they are brittle.

The following experiment furnished evidence of the fact that frozen corn makes good silage. Several stalks of corn were cut and placed in an artificial ice machine, so that they were solidly frozen for 12 days. They were then thawed out, chopped, and ensiled as usual. The consequent evolution of carbonic acid gas, and the formation of acid and alcohol were about the same in amount as in the normal corn silage. The appearance and odor were normal and good. Of course, after corn is frozen, the plant cells are killed and after thawing, will spoil. Therefore the corn should be ensiled as soon as possible thereafter.

RAPE SILAGE.

Also with the cooperation of Mr. Evvard, the writer has succeeded in making good silage from rape and from mixtures of rape with other materials. Rape and alfalfa are among the very best pasture crops for swine, on account of their luxuriant growth, high protein content, and efficiency as growth producers. If rape proves to be as efficient in the form of silage as when green, its value to swine growers will be greatly increased.

Rape is rather more difficult to ensile than corn, because it contains more water and a higher percentage of sugar, as well as certain substances containing sulphur, which are likely to form disagreeable products if the fermentation progresses too far. The higher sugar content also tends toward the development of more acid than in corn silage. The silage made from the entire rape plant and from rape leaves was, however, pleasant in taste and odor, but very sour. If the same precautions are observed as in making corn silage, such as packing well into an air-tight silo of the proper shape, there should be no great difficulty in preserving rape.

The mixtures which were made with rape and other plant materials were much better, however, especially in the case of added legumes, such as alfalfa and red clover. The rape supplies to the mixture the necessary sugars, which are deficient in amount in the legumes. This mixed rape-legume silage may be made in almost any proportion, from 20 parts to 80 parts per hundred of rape, and the resulting silage, if properly made, will be pleasant and aromatic in taste and odor, and not too sour. The alfalfa-rape mixture will furnish a silage high in flesh-building and growth-producing constituents, and perhaps better for swine feeding than other mixtures. The following plant materials, however, made successful silage when mixed with rape: corn grain, whole corn plant, potatoes, blue grass, and timothy.

Feeding experiments with rape silage have not yet been conducted, but are contemplated. However, a number of samples of pure rape and mixed silages were offered to pigs to ascertain whether they would be palatable. The pigs ats the silage quite readily, after a few preliminary sniffs, and appeared to enjoy it, in contrast to their then regular ration of corn and tankage. The second day it was offered to them, the same animals ate the silage with relish. It is, however, well to remember that the *feeding* of rape silage is still in the preliminary experimental stage, and while there is no apparent reason for its failure, it should be attempted only with caution.

The sugar content of rape makes it an excellent complement of alfalfa as far as having the proper composition for good silage is concerned. Neither plant will make as good silage alone as the mixture of the two. As it is often of advantage to ensile alfalfa, especially when weather conditions are not right for making hay, the combination of the alfalfa with 20 to 50 parts per hundred of rape will make excellent silage, and preserve the alfalfa crop in an excellent condition, besides avoiding the great loss in feeding value which occurs in making hay during unfavorable weather. This kind of silage would probably be of value in feeding cattle, although too high a percentage of rape in the mixture would be likely to taint the milk if fed to dairy cows.

OTHER SILAGE CROPS.

Many other crops have been advocated and used for silage, such as pea vines, beet pulp, beet tops, sorghum, oats, rye, vetch and many others. In Iowa it will rarely be found necessary to ensile these unusual materials except when the material would otherwise be lost, as in the case of waste from canneries. Certain mixtures are not without their value, however, such as the addition of clover, soybeans, rape or cowpeas to corn, as protein supplements. In these cases it is best to plant the material between the corn rows, to be cut and ensiled at the same time as the corn. It is well to remember that as far as its contents of protein and sugar is concerned, the corn plant furnishes the most nearly ideal single plant material for silage. Plants similar to the legumes contain too much protein material in proportion to the sugar content; and rape has a rather high sugar content. Thus it is easily seen why a mixture of rape and a legume makes such excellent silage.

GENERAL PRECAUTIONS.

The following facts regarding corn silage are briefly reviewed on account of their value at silo-filling time.

The corn forage should be ensiled when the grains are well dented, which is generally when the lower leaves and husks are beginning to dry up, and the corn is nearly ready to be cut for shocking. The sizes of pieces into which the corn should be cut is not of very great importance, but an average of one-half to one inch long is very generally accepted as correct. The corn will usually not need added water if cut at the proper time in a normal season. In general it is better, however, to allow the corn to become as mature as possible and add water, rather than to ensile it when too green. If it is dried out or has been severely frozen, so that it does not feel moist in the silo, water should be added, preferably at the blower. Then when the silo is filled the top of the silage should be thoroughly soaked with water. The addition of water and thorough tramping during the filling help to prevent spoiling. During the filling the sides should be kept slightly higher than the level of the center, and the silage should be tramped especially well near the walls, in order that air spaces may not be left when the silage settles, thus allowing the growth of mold. If the silo is air-tight and the filling is conducted with care, there should be little if any moldy silage, except at the top. The loss at the top may be lessened by covering with stover or waste material, soaking down, and sowing to oats—or better still by starting to feed the silage at once. In the latter case, the silo may be refilled after the silage has settled, without having to throw out any spoiled silage.

The refilling after settling may be done with fodder which has dried out in the shock. Of course this must be well soaked with water. The entire silo may be refilled with dry fodder, after the first lot of silage is fed, provided it is well packed and about an equal weight of water added. The water should be added slowly, to give it an opportunity to soak into the cut forage before running off. The silage resulting is not as palatable or as aromatic as normal corn silage, but it is much more succulent and is eaten more readily by cattle than is the dry fodder. Thus the usefulness of the silo may be extended over a much greater part of the year.

Moldy silage is best not fed to any farm live stock. Mature cattle sometimes seem to be able to eat moldy silage without harm, but horses are peculiarly susceptible to it.

IOWA AT THE INTERNATIONAL.

HORSES AND CATTLE FROM IOWA FARMS WIN MANY HONORS AT CHICAGO SHOW.

FROM GREATER IOWA.

Backward, turn backward, Oh Time in thy flight;
Make me a boy again, just for one year;
Teach me good farming, and teach me aright,
To raise a fat porker, to grow a prize steer.

The old International got a dreadful scare a few days before the time arrived to throw open the gates for the annual feast of fatness. Everything was in apple-pie order. The house was swept, polished and tricked out like sweet sixteen for graduation day. Clean sheets and the company china were brought out. Chicago donned her starchiest togs and dragged forth all the available cots in the city for the accommodation of the country cousins.

Then, like the proverbial thunder clap from an unclouded sky, the wires flashed news of a most disquieting character. Down at Kansas City the authorities discovered a consignment of cattle suffering from an ailment presenting marked symptoms of foot-and-mouth disease.

Consternation prevailed in stock circles. Quarantine rules and regulations were dragged forth and furbished in readiness for instant use. Orders went forth to hold all shipments of stock for the show pending further investigation.

For a week or more calamity hovered over the land, threatening a repetition of the disaster that wiped out the shows of 1914 and 1915. To the unspeakable relief of the country it proved to be a false alarm. Restraining orders were countermanded, stock shipments went forward and once more the International Stock Show bloomed in all its old-time glory and grandeur.

The Iowa draft horse attended the show in a body, so to speak, and he mowed a swath that was the talk of the town. In times past it has been customary for Iowa horse breeders to exhibit on the every-man-for-himself plan. Nothing in the way of organized effort and team work had ever been attempted. But this year a new idea was worked out, a very admirable idea that served to center public interest upon Iowa and Iowa affairs.

One entire barn was reserved and filled from front to rear with Iowa horses, making of it a distinctly Iowa exhibit, separate and apart from all others. It eliminated the necessity of chasing up and down and back and forth from Dan to Beersheba to locate exhibits from the Hawkeye state, and it impressed the visitor to the International more than ever before of Iowa's prominence in stock-breeding circles. Iowa claims to lead all other states in the production of choice draft horses, and this effective bit of team work in the form of a combined exhibit was convincing evidence of the truth and accuracy of the claim. The idea found birth in the brain of Mr. G. E. O'Brien, secretary of the Iowa Draft Horse Breeders' Association, and a very large share of the successful working out of the plan and the favorable impression created by the exhibit is due to his earnest work in connection with it.

A very tasty decorative scheme in blue and white was carried out through the entire stable. A huge banner stretched across the front of the barn proclaimed the headquarters of the Iowa draft horse and listed the names of the breeders whose animals made up the exhibit. The impression created on the thousands of visitors from all parts of the country was marked, and from early in the day till long after the electrics had been turned on, the Iowa barn was the center of an admiring throng. It was a distinct innovation and doubtless presages the dawn of a new era in stock showing at fairs and expositions.

The showing is the final arbiter. Men may differ concerning the good points and qualities of an animal, but after the judges have considered the merits and sifted the claims of the various aspirants, and distributed the favors that betoken the highest excellence, the public ratifies the decision by cheerful acquiescence. And in the world of fairs and expositions the International, coming as it does at the close of the year, is considered by stockmen as the last high court of appeals. Consequently its findings, its awards, carry a significance above and beyond the awards of all previous shows, great or small.

Knowing these things, Iowans are entitled to feel a vast and just pride in the achievements of Iowa horses at this last grand gathering of the clans, marking the end of the show season of 1916. They had been conspicuous among the winners at the fairs the last three months, county, district and state, and the winnings at the International capped the climax of show-ring honor and glory.

Three grand championship ribbons fell to Iowa horses, two for the Belgians and one, the stallion championship, to the Percherons. These two breeds were shown in about equal strength and numbers, and it was a toss-up which was the more popular with the throngs of horse lovers. The Singmasters, Casey Bros., Hoit and Sons, Crawford & Griffin, and Harry Early contributed to the Percheron show, while Lefebure, Wm. Crownover, Chas. Irvine, C. G. Good and Crawford & Griffin showed the lordly Belgian. The Iowa State College presented some excellent specimens of the feather-legged breeds and H. Harris Ford carried the Clydesdale banner.

The famous Singmaster Percherons were the first to greet the eye as the visitor entered the barn. Mostly black, with a few grays for variety, the stalls presented a striking and majestic array of equine beauty and massiveness. While practically all prize winners at various shows of the year the one outstanding animal of the exhibit, the one that caught and held the visitor's attention and admiration above all others, was the splendid dapple gray stallion, Lagos 99093 (102389). The picture shown, while an excellent one, the best ever taken of this horse his owners assert, still fails to do the animal full justice. He is one of those rare specimens that reveal the limitations of camera. Type, color, general character and excellence of bone and conformation are delineated to perfection, but the photo fails to bring out the amazing thickness and massiveness that characterize this horse and put him in a class by himself. It also pictures him a trifle too high from the ground in the rear, for he is a low-hung fellow, a real "Dutchman's horse," if ever one came out of France. He weighs in present condition 2,350, and carries it as handily as a chunk of two-thirds the weight.

Chas. Irvine's grand chestnut, Alfred de Bree Eyck 7959 (73424) carried off the championship honors in the Belgian division, winning over what was perhaps the greatest ring of Belgian stallions ever brought together in this country. Alfred weighs 2,430 pounds, and faced the judge in perfect bloom and condition. The world has seen few horses like this one. It is extremely doubtful if his equal can be found today, certainly no superiors. Conceding equal excellence on the part of his competitors in matters of type, weight, style, quality and action, he then easily beats them all between the body and the ground. The picture shows fairly well the great set of legs that carries his ton and a quarter weight. They are as clean, hard and flinty of bone as the legs of a racer. Knee and hock are of the sort rarely seen beneath a drafter, while the big, round, open-heeled hoofs are absolutely beyond criticism.

Wm. Crownover won the mare championship with a big, blooming chestnut daughter of Farceur. This filly that bested the best of the country in the female events is a two-year-old. The weights have to be stacked up to the extent of 1,990 pounds before the scale beam tips to her majestic proportions. She is an extraordinary young mare, one of Mr. Crownover's own breeding and furnishes ample proof that Iowa can lead the world in the production of Belgian draft animals.

The Iowa College of Agriculture was very much in evidence all along the line at the International, and, as usual, succeeded in capturing a liberal portion of the choice ribbons and trophies. Some sixty or more head of well-finished animals, horses, cattle, swine and sheep, took part in the contests and earned glory for the institution where bred, fed and finished. But the best part of the Ames exhibit, a truly live one, was the college students who "went in" two hundred strong to enjoy the doings and root for the institution of their choice. And the reader may rest assured that no opportunity for rooting was allowed to pass ungrasped. The judging team captured second honors in a contest in which teams from fifteen agricultural colleges took part, representing fourteen of Uncle Sam's states and the province of Ontario. The Iowa team made a score of 3,950, the Hoosier boys from Purdue University winning first place by only twenty points, not enough to crow over, but sufficient to annex the $1,000 trophy offered by the Stock Yards Company. Individual honors went to J. M. Buoy, of the Iowa team, who scored a total of 885 points out of a possible 1,000, winning thereby a gold medal as a reward for efficiency.

IOWA FAIRS OF 1916.

FROM GREATER IOWA.

Like some huge motherly biddy the Iowa State Fair reposes majestically in the geographical center of the state surrounded by a lively brood of ninety-nine county and district fairs. Some of the brood, long past the frying age, are hearty and husky in the extreme; some are in the callow stage of pin feathers, while a few fresh from the shell are facing the problem of existence and the chances for eluding the snares and pitfalls of financial shortcomings.

Last year was a distressing one for fairs in Iowa. The old hen got pretty badly soaked, financially, and several members of the brood, not being equipped with webbed feet and life preservers were, to all appearances, drowned. But through some happy and mysterious means of of resuscitation they appeared again with the brood early in 1916, and from the way they were able to scratch and crow—especially the latter—it was plain they were undiscouraged by their flood experiences.

The present year, 1916, proved a good and prosperous one for the fairs in Iowa. It more than made up for the delinquencies and disasters of 1915. At the close of the 1915 fair season a few pessimistic individuals scattered about the state predicted what they were pleased to term the "passing of the county fair." They declared dolefully and dolorously that as an institution it had outlived its usefulness, and in their minds had it dead, buried and forgotten. As prophets they proved lamentable failures, for after the soaking of 1915 the fairs bloomed bigger, brighter and better than ever before, and vastly more popular, if the attendance figures are a proper criterion of estimation—which they are. A tolerant clientage allowed the calamity howlers plenty of platform room and full permission to talk it out of their systems. Meanwhile they went cheerfully about the business of greasing the wheels and inflating the tires for 1916. For the county fair is billed for an indefinite run; slated for a long and useful life, knockers to the contrary notwithstanding.

The story of the state fair has been exploited in these columns. From whatever angle regarded it was an unprecedented success. It is possible for a fair to achieve financial success—for a time—and yet be manifestly lacking in the essentials that constitute properly rounded and balanced expositions of agriculture. It is also possible for a fair to be up to the standard in the essentials, meaning the exhibits, entertainment, etc., and yet fall short financially.

The state fair of 1916 made good on every count. Without exaggeration it can be said of it that it was the most consistent, the most perfectly balanced in matters of entertainment and educative features of any state fair ever held in Iowa. Favored with ideal weather—with the exception of one day—it left nothing to be desired. The citizens of the state showed their appreciation by patronage so liberal that a new attendance record was established, more than eleven thousand above that of any other state fair, and an attractive balance left in the treasury.

Next to the state fair in magnitude and importance comes Sioux City's pride, the Inter-State Fair. When the founders of the Inter-State picked the "Soo" wherein to stage their production they demonstrated rare ability as pickers. For Sioux City is the point of juxtaposition of three great states, Iowa, Nebraska and South Dakota, and a fourth, Minnesota, within easy "Fording" distance. Four big, rich, powerful and enterprising commonwealths to draw on for patronage. It happens in each instance, too, that the state fairs of the several commonwealths are distantly located. So when Secretary Morton announces a "Minnesota Day," a "South Dakota Day" and a "Nebraska Day" he is only giving proper recognition to each of the states that join with Iowa in making one of the greatest and best agricultural fairs in the country not immediately connected with state apron strings.

The figures setting forth the attendance, financial receipts, disbursements for premiums and the various expenses incident to the promoting of a great fair are really of state fair fatness and volume. The attendance totaled 68,643. Premium money to the amount of $13,457 was distributed among 700 exhibitors, while the total expense of putting on the show was $34,328.

The fame of the Cerro Gordo County Fair, held annually at Mason City, has strayed far beyond the boundary lines of the state, and it furnishes an excellent example of what it is possible to achieve in the way of county fairs by earnest effort and teamwork. The attendance this year totalled 38,983, and practically $7,000 in cash premiums was distributed among 1,930 exhibitors, the largest number at any fair in the state outside the state fair.

The Marshall County Fair boasted the second largest number of exhibitors, following Cerro Gordo with 1,066. They had an attendance of 32,492, and paid out $6,406 in cash premiums. The Burlington Fair entertained 36,414 visitors and distributed $18,358 among exhibitors. The attendance at Cedar Falls was 32,429; at Waverly 35,940; at Atlantic, in Cass county, 40,000; Wayne county held a new fair at Corydon and pleased 30,000 visitors; Kossuth, Henry and Shelby counties had more than 25,000 each.

A total of $56,870.67 in the way of state aid was paid out to the ninety-nine county and district fairs, thirteen of them, those in Blackhawk (2), Bremer, Cerro Gordo, Clinton, Des Moines, Henry, Johnson, Lyons, Mahaska, Marshall, Muscatine and Woodbury counties receiving the maximum amount, $800. The amount of state aid rendered this year is greater by $8,784.69 than was paid in 1915.

There are two unfailing factors for determining whether interest in agricultural fairs is growing or waning, the attendance and the exhibitors. When both are increasing from year to year the inference is plain. In 1914 the total number of exhibitors at the county and district fairs in Iowa—this does not include the state fair—was 16,717; in 1915, notwithstanding the inclement weather conditions, it climbed to 20,687; while this year the figures reached 23,955, an increase of 7,238 in two years. The attendance figures show the same encouraging growth. In 1914 the total number of visitors attending the county and district fairs in the state was 1,003,271; in 1915 it was 1,115,605; in 1916 it reached 1,272,479, an increase of 269,208 in the two years, which is a showing little short of extraordinary and indicates anything but a waning interest in county fairs.

The total amount of money distributed in premiums in 1914 was $232,719.51; in 1915 $245,951.32; in 1916 $293,988.67, an increase of premium money to the extent of $61,269.16 in two years. These sums include the purses in the speed department, but the increase has been mainly in other departments than the speed programs.

Agricultural fairs are not promoted and conducted for money-making purposes. Most associations are satisfied if they can manage to break even from year to year and more than pleased if they find an occasional nest egg in the way of profits in the strong box, to be used in equipment and maintaining the plants. In 1914 the total amount of money expended by the county fairs of the state in the way of premiums, money paid for attractions, for help and various other incidental expenses was the tidy sum of $466,000, to make use of round numbers. But the cost of living is increasing, likewise the expense of promoting fairs, and in 1915 it cost $521,599 to put them on; while in 1916 the total amount of such expenditures was $626,870.

BREAD UPON THE WATERS.

STATE GAINING IN POPULATION. IMMIGRATION SETTING FROM NEW QUARTER.

BY IVANHOE WHITTED.

The census returns for 1915 furnish some highly interesting conclusions in regard to the ownership of Iowa land, population, immigration, emigration, etc., all the more interesting because indisputable.

The writer has never been able to completely submerge an early acquired antipathy to those two words, "immigration" and "emigration." The spelling bothered him for one thing; he was never quite sure where to use the double-m. A strict regard for the truth compels the admission that he still has to consult the dictionary on occasions. The meaning, too, seemed one of such subtile distinctions that he always felt that one word might have been made to cover the field. Finally it was made clear to his boyish obtusity that the man coming into the state, or vicinity, is the immigrant, while the individual hiking forth bag and baggage to new fields of conquest is the emigrant.

It was during the days of that extraordinary exodus of homeseekers bound for the Great New West. Countless thousands of white-topped wagons pursued a slow-moving way across the boundless prairies, the earnest faces of the travelers set unflinchingly toward the setting sun. It was a wonderful and awe-inspiring sight, one that can never be witnessed again.

There was a certain hill from the top of which it was possible to survey the country for miles in every direction. One well-remembered day the small boy sat upon the eminence and forever established the meaning—if not the spelling—of those two words in his curriculum. He watched the "covered wagons" drift slowly across the prairie from the east, pass through the station, for the river and climb the long clay hill westward bound. "Now," said he, as with screeching brakes the wagons slipped down the hills toward the village, "they are immigrants; and now," as the toiling oxen disappeared over the long clay hill toward the west, "they are emigrants."

When the official count of the census enumerators in 1910 was given to the public it was discovered that according to the record Iowa had suffered a falling off in population as compared with the figures of 1900. It wasn't much, to be sure, a matter of 7,082, lost some time during the ten-year period, but it was enough for the knocker and he promptly got busy with his hammer. Envious neighbors pointed the finger of scorn; they said that so far as Iowa was concerned that word, immigrant, had been eliminated from the world's vocabulary; that there was only one word for us and that was emigrant; that the citizens of Iowa were passing over the big hill and away. Some of those finicky down easterners even hinted at race suicide, but out here in Iowa we know better than that, for we have the living, hustling proof of the falsity of the accusation in countless numbers.

Well, for a time, as might have been expected, we felt pretty badly cut up over the showing. What did it mean, anyway, that slump of seven thousand people? What had become of them? After the first keen edge of mental misery and humiliation had become somewhat dulled and we were able to look our accusers squarely in the eye we began a search for reasons. They weren't hard to find. In fact, they were all about us, ready for use, and some of our neighboring commonwealths, especially those to the west, knowing them, had doubtless snickered gleefully in their sleeves while taunting us with race suicide and other shortcomings.

The population of Iowa in 1900 was 2,231,853; in 1910 the federal enumerators could find only 2,224,771, a loss of 7,082 for the ten-year period. Now, it will be recalled that it was during this same decade that Iowa land values enjoyed such extraordinary appreciation. Prices advanced by leaps and bounds. It was amazing. Naturally the period marked by signal activity on the part of land agents and real estate promoters. The state was infested with them, also pestered with them. They were thicker than flies about a garbage can in August and exceedingly industrious in pushing the claims of cheap lands in other states. Every community harbored a nest of them, hustling day and night to induce Iowa farmers to sell their holdings and invest elsewhere, southwest, west and northwest.

Thousands of Iowa owners sold out and for a few years there was an exodus from the state like unto a certain memorable hike from Egyptian territory, inaugurated under different conditions, but with practically the same end in view, namely, The Promised Land, only, in this case instead of "promised by God" the emigrants had only the word of an agent, which not infrequently proved unreliable.

"Moving time" in spring witnessed the departure of entire train loads of home seekers bound for the much-touted localities of cheap land. The agents waxed fat on commissions. Many an individual with no other capital than an unlimited supply of nerve and a vocabulary rich in descriptive adjectives feathered his nest and moved over upon Easy Street to reside the balance of his days. And to this day no man knows just how much good Iowa money, how many good Iowa citizens and how much Iowa live stock went forth to swell the coffers and aid in the development of the resources of Canada, Montana, the Dakotas, Idaho, Colorado, Texas and other states. One and all they are heavily obligated to the Hawkeye state for material favors received and unlimited assistance rendered in their call for development.

At that time Iowa had thousands of small farmers located upon tracts of forty, sixty and eighty acres. They had been grubbing along for years in a discouraging way. They stayed because they had to, for land wasn't "moving" to any appreciable extent. Prices for farm products and live stock were low, some years actually less than the cost of production, even on comparatively cheap land and with cheap labor. Their accumulations consisted mostly of mortgages, families and grouches. Their needs in the way of more land and wider incomes were pressing. So were the holders of the mortgage. Other and newer states seeking settlers for their unoccupied lands were holding up alluring pictures of fertile acres at ridiculously low figures.

Then came the boom in Iowa land and upon the wings of the boom the ubiquitous land agent with his persuasive tongue and enticing delineations. The Iowa farmer listened. Also he did some figuring. At the prevailing high prices it was possible to sell his small tract at such an attractive figure that the proceeds would purchase three, four, five times as many acres in some of the further-west states or in Canada, and afford "room for me an' the boys to spread out."

The reader knows what happened. Often the sale was made to some rich neighbor whose being was dominated by an ambition to own all the land in his immediate vicinity and who possessed the means, cash or credit, to gratify the ambition. The small farmer packed up his growing family and hied him away to new fields of conquest. The purchaser, with plenty of horse power, added another machine or two and hired and extra hand to work the farm which formerly had made a home for half a dozen persons. When the census enumerator appeared upon the scene to count noses in 1910 the sum total suffered to the extent of the difference between the hired man upon the ground and the departed family. There, gentle reader, is that little old 7,000 slump. And if it had not been for the fact that the word immigration did continue to obtain in Iowa, our defamers to the contrary notwithstanding, the slump would have shown up as one of gigantic proportions, for during that ten-year period Iowa sent vastly more than 7,000 souls out and into the Country of the Setting Sun on missionary labors bent.

Another thing. The envious ones insist that, out here in Iowa the tendency is strongly toward landlordism; that the number of farms in the state is growing smaller and the size of them correspondingly larger. They say that the big farmers are gobbling up the little fellows, steadily but surely, and that in time Iowa will be a place of great estates, worked by tenantry, something after the fashion in the "old country," while the bloated owners will have nothing to do but clip coupons and run for office.

That the tendency of the ten-year period from 1900 to 1910, in spite of more or less immigration, was toward larger farms cannot be denied. Iowa has within her boundary lines a total of 35,575,040 acres of land. Of this amount 32,951,056 acres are listed as farm land, representing 199,755 farms, the figures of 1915. In 1905 the enumerators found 209,163 farms, with a combined acreage of 33,228,448 acres. Now that certainly looks bad for us; looks like we really might be treading the high road to landlordism at a lively clip. But wait.

When the enumerators counted the farms in 1905 they took three acres as the minimum, hence the count that year included all farms of three acres and more. Last year the minimum was raised to ten acres and the count made on that basis, instead of three acres as formerly. To the unbiased mind this fact is sufficient to account for the difference between the figures of 1905 and 1915. Men familiar with conditions throughout the state agree that the change in the minimum figure accounts satisfactorily for the lesser number of farms today compared to ten years ago.

The difference between 35,575,040, the total acreage of the state, and 32,951,056, the number of farms of ten acres and more, represents the land occupied by cities, towns, public grounds—not the public highways, which are included with the farm land—and all tracts of less than ten acres. These figures indicate that the drift toward landlordism—if such drift there be—is much less marked than at first appeared.

To go back to the matter of population. Last year the census takers found a total of 2,358,066 persons in Iowa, a gain of 133,295 to be credited to the last five years, enough, surely, to remove forever the odium of that 7,000 slump of the previous ten-year period. Now, then, where and how did we get this material increase; have the wanderers returned, bringing their children and their children's children with them? No; nothing of the kind. An occasional wanderer drifts back from time to time. For these we put on clean sheets, kill a calf and fill their famished bellies with the fat of the land of whatsoever sort and variety their palates crave—with the single exception of booze, which Iowa has foresworn. We don't say, "I told you so!" and we religiously forego the pleasure, distinctly human, of rubbing it in.

No. The tens of thousands of strong men and courageous women who severed home ties and went forth to develop other lands stayed put. They made good, always, after the way of Iowans. Occasionally one comes back to "visit the old place," but seldom to stay. And they come in huge touring cars, clad in fine raiment and an atmosphere of prosperity, big of heart, broad of soul and wide of vision, radiating the optimism characteristic of those who have triumphed over obstacles.

Go where you will, out there you will find Iowa people, always with a loving word for the state that started them in life. They have been part and parcel of the foundations upon which great and glorious structures have been reared, and no where under the canopy could be better, stauncher and more abiding material have been found. The young man that breezed gaily forth to "take up a claim," a sweet Iowa maid tucked under his arm, has worked a wondrous miracle upon that semi-desert quarter section. He has redeemed it from a state of idleness and nonproduction and converted it into a home of peace, plenty and wealth-producing possibilities. The warty-fisted boy with patches upon the seat of his pants that tagged at daddy's heels is running the local bank, publishing the city newspaper, or filling any number of other positions of trust and responsibility with honor to himself and credit to Iowa, the state that gave him birth.

No, they don't come back. Where, then, shall we look for this later augmentation of citizenry? Has it come by natural processes, by the birth route? Partly, but not altogether. The average birth rate in Iowa the last five years was 37,467. This is offset by deaths at the rate of 22,020 each year, leaving a net gain of 15,447 a year, or 77,235 for the five years, provided they all remained in the state. But we still have 56,060, or about two-fifths of the gain to be accounted for. Plainly it is up to that word, immigration.

Once more the boy—older than he used to be--sits upon the hill top to study the tide of migration. Truly it is a restless world. Time, the unequaled builder, the sure healer, has wrought marvelous changes. The boundless stretches of native grasses of that other day are no more. The russet of ripening corn and the green of clovers have taken the place of golden rod and prairie pink. The smoke from thousands of cities and towns tints the autumn air. Beautiful and commodious farmsteads with every modern comfort and convenience have replaced the log cabin and the flimsy pine shanty. More than ten thousand miles of steel net the domain once trailed by the old red and yellow coaches. Swiftly flying autos skim the country roads in contrast with the slow-moving, tongue-lolling ox teams of that other day.

Immigration, he notes, still obtains upon Hawkeye soil. And when he declares that the movement is just the opposite from the tide of that other day when he sat upon the hill and watched the white-topped hosts, the reader will insist that he is conversing through his hat. Nevertheless it is true. The indications are, indisputably, that immigration to Iowa is from the west instead of from the east as formerly.

Going back once more to the census record of 1905 we find that a very large portion of Iowa's citizens were born in the eastern states. The figures for 1915 point a marked change. The movement from the east to Iowa has plainly reached and passed the high point. The tide has turned, and today Iowa is gaining in population from the great territory west of the Mississippi river, the same to which she has given so bountifully in the past.

Let us consider a few items. Our near neighbor and competitor for honors in corn production, has always been a heavy contributor to Iowa's population, still is, for that matter. In 1905 we had no less than 136,644 citizens who were born in the Sucker State. Today we have 144,819, convincing evidence that the Illinoisan knows a good thing when he sees it, and that they are still coming. The Buckeye and the Hoosier currents have dwindled perceptibly. In 1905 we claimed 73,480 from Ohio and 41,492 from Indiana; today we have 53,217 and 36,381 respectively from those two contributors. In 1905 the enumerators found 45,379 people hailing from the state that owns Pittsburgh and Philadelphia, against 34,902 in 1915. From all the states east of the Mississippi the story runs the same.

West of the big river the figures tell a different tale. They show plainly that the pendulum of migration is swinging strongly toward Iowa. Take Nebraska: In 1905 Iowa had 19,982 citizens that were born on the sunset side of the "Big Muddy," today we have 27,193, a noticeable increase. In 1905 the state claimed 34,784 that were born in Missouri; today there are no less than 48,739 hailing from the Show Me State, and, it may be added, they have "been showed" to their entire satisfaction; they know no better farming country can be found than Iowa acres. Minnesota had contributed 13,600 in 1905. In the last ten years the number has been swelled to 19,255. Colorado is doing a share. Against 1,701 from the Centennial State in 1905 we now claim 3,342. Texas, evidently appreciating the money contributed to the weeding of her onion fields, has doubled her quota, with 1,839 at present against 917 in 1905.

Iowa made numerous entries in the famous "Cherokee Race" a few years ago, and in return Oklahoma is doing the handsome thing in the way of contributing citizens. In 1905 it required close scrutiny to locate a native Oklahoman, for there were only 706 of them in the state, today we have 3,023. Kansas, likewise, is coming our way, literally, at the rate of half a thousand a year as evidence by 17,143 today against against 12,575 in 1905. South Dakota is contributing materially, 7,863 in 1905 and 12,428 in 1915. Returns from other states, even to the coast, tell a similar story.

These figures are not presented in a spirit of boasting, nor with a desire to "crow over" our neighbors. For boundary lines, after all, exist only in the imagination and really have no geographical tangibility. Iowa is not fretting out the night hours over the possibility of the state becoming depopulated. She is getting her full allotment of beauty sleep. But, since certain erroneous impressions have gained more or less credence, a plain statement of facts seems not inappropriate.

The Book contains this definite promise: "Cast thy bread upon the waters; for thou shalt find it after many days." Which is simply another way of saying that whatever is invested will bring returns. It matters not whether it be money, labor, good deeds or evil influences, it is going to accumulate interest in consonance with the investment.

Iowa has no prodigal sons. To begin with she doesn't believe in keeping her sons and daughters tethered to her apron strings. She prefers them—and prepares them to be free and footloose to make dates with Opportunity whenever that enterprising dame rattles the front gate. She has contributed heavily and ungrudgingly of manhood and for the upbuilding of the social and educational structures of the Great New West. She will continue to give as freely and willingly as the years roll on. Thousands of eager young men and women are fitting themselves to spread the gospel of agriculture in places where the need seems most pressing. There is something about Iowa soil, Iowa atmosphere, Iowa life and Iowa traditions that instills the spirit of conquest, and the youngsters march forth at the appointed time brimming with courage to help win the battles of the world. No state has ever had cause to regret the coming of Iowa people, and there is no state that has not been materially advanced and strengthened mentally, morally and financially by these infusions of Iowa blood and bone and brawn. That Iowans invariably acquit themselves with honor is, to those who remain, ample interest and value received for bread cast upon the waters flowing in the irresistible currents of migration.

DOES VACCINATION PAY?

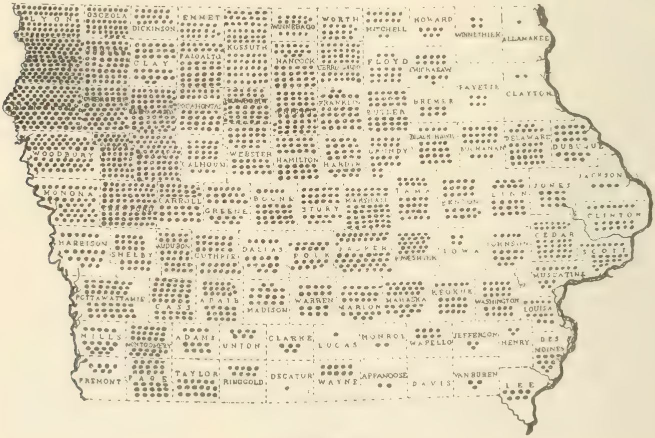
SOME INTERESTING FIGURES SHOWING THE PROGRESS MADE IN THE FIGHT TO RID IOWA OF HOG CHOLERA.

FROM GREATER IOWA.

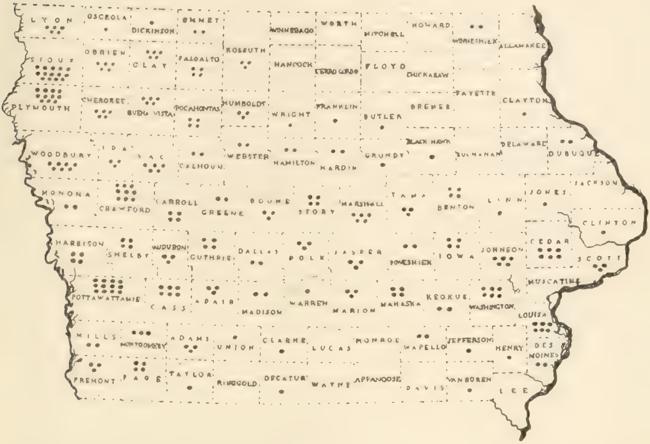
Find the answer in the two maps presented. No. 1 shows the number of hogs lost by cholera in Iowa in 1913, each dot representing 1,000 hogs. No. 2 shows the number lost by cholera in 1916, after three years of earnest effort and team work between the veterinary authorities and swine owners. Where less than 500 head were lost the county is left blank. It will be noticed that in map No. 1, showing losses in 1913, there is but one blank, Davis county, where the loss was slight for that year, totalling 280. In the other ninety-eight counties the mortality ranged from 993 in Allamakee county to 123,109 in Sioux county.

In map No. 2, showing conditions in 1916, there are twenty blanks. One of them, Cerro Gordo, has not yet reported, but nineteen of them are blank because the loss from cholera last year was less than 500 head. Buchanan county's record is little short of marvelous and indicates strict attention to business on the part of swine owners in the fight to eradicate cholera, only five head dying from cholera last year against more than 22,000 in 1913.

Allamakee county reports a loss of but seventeen head out of a tidy drove of 64,366 animals. Monroe county lost 33 head out of a total of 29,450. Howard county reports a loss of 60 out of 50,921 head. Davis county owned 44,951 head last year and lost 66 of them. Chickasaw county makes an excellent showing with a loss of 111 head out of 136,947.


LYON
OSCEOLA
DICKINSON
EMMET
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
KOSSUTH
PALOALTO
CLAY
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
POCAHONTAS
HUMBOLDT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
DELAWARE
DUBUQUE
WOODBURY
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
BUCHANAN
JACKSON
MONONA
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
CLINTON
CRAWFORD
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE

Map No. 1


LYON
OSCEOLA
DICKINSON
EMMET
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
KOSSUTH
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
BUCHANAN
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE

Map No. 2

Sioux county, the heaviest loser in 1913, was the chief sufferer again last year, losing 13,587 head out of 235,258. At that it is a marvelous gain over conditions that obtained in 1913 when cholera claimed 132,101 victims out of 170,141 head owned in the county. The total number lost in the state last year was 246,430, against 2,709,876 claimed by cholera in 1913, which is more than most states produce in a single year.

The figures presented are the most accurate obtainable, as they are furnished by the county auditors of the state, made up from the assessors' returns and compiled expressly for the Iowa Department of Agriculture. They furnish ample grounds for the belief that, with anything like perfect co-operation between veterinary authorities and the swine breeders of the state, hog cholera may in time be robbed of its terrors, just as smallpox has been rendered fairly innocuous, compared to its malignant nature of a generation or two ago.

It illustrates, too, the wonderful recuperative qualities of the swine-breeding industry in Iowa, and furnishes abundant food for thought in connection with the nation-wide movement to increase the food supply of the country. It would seem that, with the proper amount of effort, the pork-barrel route would bring wonderful results in a comparatively short time. The reader will please take that pork barrel literally, and not in the sense that the term, "pork barrel" is used in the city of Washington and other political roosts.

Take Sioux county, for example. In 1913 the county was swept almost bare of hogs, having but 47,000 head left out of 170,141. And yet in three years we find the same county reporting 235,258 head, and comparatively free from cholera at that. Think of the immense task of disinfecting and cleaning up an entire county and coming back with such a remarkable showing in only three years. It is an achievement for the citizens of the county to be proud of. And the history of Sioux county is identical with the history of many other counties in the state, as a glance at the two maps will show.

The people of Iowa have reason to be grateful to the Veterinary Department of the Iowa College of Agriculture for telling work in the campaign to free Iowa from the scourge of hog cholera. A group of quiet, efficient workers, those gentlemen at Ames, who say little about themselves and their work because they are too busy. But while they say nothing the results of their labors speak eloquently in indisputable figures showing the widened prosperity of the swine-growing industry of the state.

One sometimes hears the assertion that, "hog cholera vaccination does not pay; that it neither cures nor immunizes," and more to the same end. Utterances of this nature usually emanate from the uninformed, or perhaps from an owner who has been "stung" by some itinerant vendor of worthless serum. For it can not be denied that in this new and profitable industry of serum manufacture numerous worthless and harmful concoctions have been foisted upon a confiding public.

It is along this line that the College Veterinary Department has put in some of its most telling licks, ferreting out makers of worthless serum and driving them out of the state. There is plenty of safe and reliable serum manufactured in Iowa and there is no excuse whatever for a swine breeder to allow himself to be swindled if he will take a small amount of pains to inform himself by keeping in touch with the veterinary officials at Ames.

The laws of Iowa are very plain, very emphatic and very effective in controlling the manufacture and sale of serum in the state and safeguarding the purchasing public. The restrictions surrounding the manufacture of serum are many, and it is up to the Veterinary Department of the College to see that the requirements are lived up to by manufacturers; that the serum is made, packaged, sealed, labeled and all the rest of it according to law.

And they do it. The system of inspection worked out is efficient. Several unreliable concerns have been driven out and a number of similar character with headquarters elsewhere have been denied the privilege of selling their questionable wares in the state.

Iowa farmers should keep in touch with the authorities at Ames. The college was founded for the benefit of the agriculturist and the stock grower, and the man who carries on his farming operations alone and independent does not realize what he is missing when he passes up the help and influence of the greatest agricultural institution in the country.

It is safe to patronize any serum company recommended by the college authorities, any company that has passed inspection and complied with the requirements of the Iowa law. It is not safe to buy serum that has not received the approval of the inspectors, and the man who does so has nobody but himself to blame in case of disappointment. So, when in doubt, write Ames.

PART IX

Report of the State Veterinary Department for the Biennial Period Ending June 30, 1916

J. I. GIBSON, State Veterinary Surgeon

During the biennial period ending June 30th, 1916, this department has answered seven hundred and fifteen official calls. The principal diseases found to exist were hog cholera, tuberculosis, forage poisoning, hemorrhagic septicaemia, coital exanthema, rabies and scabies.

We are pleased to report that none of these diseases exist to any alarming extent, although, as the state develops and the live stock industry increases, the demands upon this department become more numerous. The increase in the value of live stock calls for greater efforts on the part of this department to protect against the diseases that tend to depreciate or destroy our domestic stock.

For many years, hog cholera was the cause of great loss to the Iowa farmer, but with a preventive serum treatment, and an organized effort along educational and regulatory lines, the losses from this disease have been reduced to a minimum as compared to former times, and with more complete organization and persistent efforts, the time is at hand when cholera should be controlled and eradicated.

Tuberculosis is now the most serious menace confronting the cattle and swine industry of the state. This disease is causing greater losses to the Iowa farmer today than hog cholera and it is high time that we should have legislation with sufficient appropriations to control and eradicate tuberculosis.

This disease is found to exist in cattle, and is being transmitted to hogs that run with the cattle, to an alarming extent. It is costing about $5,000,000.00 annually, to run the hogs with the cattle in Iowa. If tuberculosis could be eradicated from our bovine herds this loss could be prevented.

To accomplish such results the Animal Health Commission and the Veterinary Department of the State must necessarily be endowed with largely increased appropriations.

Iowa has practically double the live stock values of any other state in the Union, and at present we have an appropriation of only $11,000.00 annually for our work of controlling animal diseases. Minnesota, with about one-half our live stock values, has about $80,000.00 a year for its live stock sanitary work. Pennsylvania, with live stock values not exceeding 25 per cent of those in Iowa, has approximately $75,000.00 a year to carry on their live stock sanitary work. These comparisons are surely sufficient to indicate that the great state of Iowa is not doing enough for the protection of her live stock.

We recommend that there be appropriated annually at least $100,000.00 to carry on the live stock sanitary work in Iowa, especially looking toward the eradication of tuberculosis and hog cholera.

During this period we were confronted with the greatest possible menace to our live stock industry, in the outbreak of foot and mouth disease, which occurred in November, 1914, which, in full co-operation with the Bureau of Animal Industry, United States Department of Agriculture, we succeeded in eradicating in less than five months, with no recurrence, which fact proves that the work of eradication was thoroughly carried out in every detail.

To accomplish this result it was necessary to resort to severe quarantine measures to which there was some opposition, although considering the extent to which these measures interferred with the business of the state, we must say that the people with few exceptions, were loyal in their support of the work of the department. The United States Department of Agriculture bore one-half of the expense connected with the outbreak, and we take this opportunity of publicly expressing our thanks and appreciation to the Secretary of Agriculture, the Chief of the Bureau of Animal Industry, and all the bureau inspectors who worked so faithfully, assisting us in overcoming the dread foot and mouth disease.

In this report we present a short history of the general outbreak of foot and mouth disease throughout the country, by Dr. John R. Mohler, and a detailed statement of the outbreak in Iowa, by counties and individual premises.

The following number of cases were investigated during the period between July 1, 1914, and June 30, 1916::

Actinomycosis	1	Measles	4
Blackleg	3	Rabies	25
*Cholera	27	Scabies (cattle)	4
Coital exanthema	48	Scabies (sheep)	45
Forage poison	22	Stomatitis	1
Hemorrhagic septicaemia	36	Pneumonia	4
Glanders	24	Tuberculosis	414
Mange (horses)	4	Necro-bacillosis	1
Miscellaneous	52	Total	715

---

*Does not include eradication work done in Clay, Dallas, Clinton, Muscatine and Scott Counties, nor many investigations where no contagious or infectious disease was found to exist.

OUTBREAK OF FOOT AND MOUTH DISEASE IN 1914-15.

Foot and mouth disease has appeared in the United States on six different occasions—1870, 1880, 1884, 1902, 1908 and 1914. The widespread outbreak of 1914-15 was the most serious and extensive that has occurred in this country. The previous outbreaks were limited to comparatively small areas and did not appear farther west than the state of Michigan. The last outbreak was discovered in the state of Michigan, near Niles, in October, 1914, and it had evidently existed there since the latter part of the previous August. Its source has never been definitely determined and actual proof will probably never be obtained, although the infection was undoubtedly introduced in some way from abroad.

On September 3, 1914, the state veterinarian of Michigan, together with a veterinary inspector of the Bureau of Animal Industry from the Detroit station and two local practitioners inspected the two infected herds near Niles, but failed to recognize foot and mouth disease because of its mild type at that time, its slow progress through the infected herds, its disinclination to spread quickly to adjacent herds, the absence of vesicles which are the characteristic lesions of the disease, the absence of any history of vesicles, the advanced age of the lesions, the presence of lesions due to secondary invasion of other infections, the resemblance of the lesions to necrotic stomatitis, and the prevalence of mycotic and necrotic stomatitis in Michigan and other states at that season of the year.

A few scrapings, consisting of saliva, scabs, pus, and bits of necrotic tissue, forwarded to the pathological laboratory of the Bureau of Animal Industry at Washington by the assistant veterinary inspector, apparently were characteristic of a form of stomatitis, but arrived in such a condition as to render it impossible to make a diagnosis of foot and mouth disease from this material.

Nothing further was heard from the disease in Michigan by the Washington office until October 10, when a letter and three specimens taken from lesions of recently affected animals were received from the inspector in charge of the Detroit, Michigan, meat inspection station. The inspector stated in his letter that he had visited Niles in company with the state veterinarian, and found the disease had spread from the original two herds to six others. The history of the various affected herds and the lesions found in those most recently infected were so completely described in the letter that foot and mouth disease was suggested. On receipt of this information an expert was sent from Washington on the next train to investigate the report. The three specimens which were received with the inspector's letter were used immediately to inoculate three calves at the Department Experiment Station located at Bethesda, Md. On October 12, the expert wired from Niles, Michigan, that the clinical appearance of the affected animals was positive of foot and mouth disease and requested that Dr. J. R. Mohler be sent to confirm the diagnosis. The chief of the bureau in return wired instructions to the expert at Niles to inoculate a calf and if there were no developments within forty-eight hours in the three calves inoculated at the experiment station, Dr. Mohler, the assistant chief of the bureau, would be sent to Niles. No disease developed at the Experiment station within forty-eight hours, and Dr. Mohler, accompanied by several veterinary inspectors, proceeded to Niles, arriving there at 6:30 o'clock on the evening of October 15th. He proceeded immediately to one of the infected herds, made his examination by the aid of an electric flashlight, confirmed the diagnosis, and wired a report to the chief of the bureau that night, in which additional men were requested to assist in the work of eradication.

The long time required for the inoculated animals at the experiment station to show any evidence of disease—one requiring seven days, one nine days, and the third remaining healthy—as well as the slight extent to which the disease had spread on the farms in Michigan before its nature became known, showed that at first the infection was of an exceedingly mild form, although it increased in virulence as the outbreak progressed. In spite of the fact that no quarantine measures had been imposed, the disease remained confined to a restricted area for more than six weeks, which is very unusual with foot and mouth disease and very commonly observed in various forms of stomatitis.

Through active scouting by employees of the Bureau of Animal Industry on October 16 and 17, many diseased herds were discovered in the vicinity of Niles, and it was learned that the infection had been spread rapidly through local creameries but was yet confined to an area about eighteen miles long and eight miles wide, extending from Niles southwest through Barrien county, Michigan, into St. Joseph and LaPorte counties, Indiana. Barrien and Cass counties, Michigan, and St. Joseph and LaPorte counties, Indiana, were quarantined under an order of the Secretary of Agriculture, effective October 19, 1914, and the authorities of the infected states proceeded immediately to issue their quarantine orders.

Before proceeding with the actual work of eradication, arrangements were made with the various state officials for co-operation in the work, and it was mutually agreed that the United States Department of Agriculture and the states should share equally the expenses incurred in the purchase of diseased and exposed animals, the cost of burial, the cleaning and disinfection of infected premises, and the appraised value of property destroyed in connection with the cleaning and disinfection of infected premises. These arrangements proved generally satisfactory and the states willingly rendered valuable assistance in suppressing the disease.

As this outbreak occurred in a thrifty dairy and stock raising community in close proximity to the public stock yards of the Central West and not far from the open range territory, the live stock industry of the country was threatened with a grave calamity, and it was realized that prompt drastic measures must be adopted if we hoped to eradicate the disease. After seriously considering the unfavorable conditions that were confronted and the consequences to the live stock industry that would follow failure, it was decided to adopt the quarantine, slaughter and disinfection method in combating the disease, as this method had proved successful in eradicating previous outbreaks from this country and is, in fact, the only method that has ever proved effectual in eradicating foot and mouth disease from any country.

Steps were taken immediately to assemble a sufficient number of inspectors; the creameries were closed; all movement of live stock in the quarantined district was stopped; all shipments that had gone out of the infected territory for the previous three months were traced back to the farm, and all cars that had carried live stock out of the district during that time were ordered cleaned and disinfected before they were again used. Everything was going along smoothly and rapid progress was being made in eliminating the centers of infection in the quarantined counties. But on October 27, a report was received from Blissfield, Michigan, that some stocker steers shipped from the Chicago stock yards to Blissfield October 19, were sick. Dr. Mohler, in company with Michigan officials, left Niles for Blissfield immediately, arriving there early the next morning, October 28. Three of the steers were found to be affected with very acute lesions of foot and mouth disease, while the others in the carload lot had not as yet developed any symptoms. This was the first intimation anyone had that the Chicago stock yards might be infected, and there were some grounds for believing that the steers at Blissfield might have picked up the infection in the cars in which they were transported to or from the Chicago stock yards, rather than in the yards themselves.

No disease as yet had been discovered in the Chicago stock yards; however, as a precautionary measure, the stocker and feeder division was closed and locked on the evening of October 28, by request of Dr. S. E. Bennett, the inspector in charge, who acted on his own initiative in this matter soon after receiving a message by wire from Dr. Mohler informing him of the outbreak at Blissfield, and giving further instructions in regard to sanitary precautions to be observed in handling animals at the yards. Dr. Bennett received the support of all interested parties in closing this division of the yards, and his action was approved by the department.

In addition to closing the entire stocker and feeder division on the night of October 28, 1914, steps were taken immediately to clean and disinfect it under government supervision, to locate all shipments of stockers and feeders that had gone out from the Union Stock Yards since October 1st, and all available veterinarians were sent out to make inspections throughout the state of Illinois of such shipments. Notices were also sent to bureau and state officials advising them of shipments that had gone into their territory, with the request that these animals should immediately be located and inspected to ascertain if they had developed any symptoms of foot and mouth disease since they left the yards. Arrangements were made with the various railroad companies to call in immediately their live stock cars for cleaning and disinfection, especially those that had carried live stock from or through the infected districts of Michigan and Indiana. All this work was done before any disease appeared in the Union Stock Yards and when there was but a suspicion of it. The railroads responded willingly to the request of

Dr. Bennett for co-operation, and an endeavor was made at this time to supply cleaned and disinfected cars for all shipments going out of the fat stock division that might be diverted as feeders.

The government and Illinois state officials and the members of the Chicago Live Stock Exchange lived in hourly dread and expectation of an outbreak of the disease in the stock yards, as they had during the 1908 outbreak in Michigan, but no one knew then or even now that any infection existed in the fat stock division on October 28, when word was received of the outbreak at Blissfield in cattle that had left the stocker and feeder division of the yards on October 19, 1914. No foot and mouth disease ever developed in any live stock that passed through the Chicago yards prior to October 19, 1914.

While a thorough investigation failed to locate infection more definitely in the Chicago stock yards than was indicated by the Blissfield shipment, it was decided to take precautionary measures and as a result, the Secretary of Agriculture issued an order effective October 31, quarantining these yards.

The National Dairy Show was held at Chicago from October 22 to 31, and at the time the quarantine order of October 31 went into effect, the National Dairy Show cattle were in the barns of the Union Stock Yards Company, having been held for observation by the state veterinarian of Illinois on October 29, at the request of the bureau, and in addition a large number of stockers and feeders as well as fat cattle were in the pens of the Union Stock Yards Company. Shipments from the stocker and feeder division had been discontinued since the evening of October 28. The day following the quarantine of the Chicago yards, one of the dairy show cows developed unmistakable lesions of foot and mouth disease, and two days later, November 3, several of the feeders which had been held under lock and key in the stocker and feeder division of the yards since October 28, likewise developed the disease. The discovery of these cases in the dairy show barn and the stocker and feeder division of the Chicago stock yards was the first knowledge anyone had that foot and mouth disease existed in Chicago.

The secretary's quarantine order stopped the movement of all animals to and from the Chicago stock yards, except for immediate slaughter, and as soon as the disease was discovered there, all of the pens were cleared of animals and preparations made for a general cleaning and disinfection. The 840 cattle that had been held in the stocker and feeder division under lock and key since the evening of October 28 were slaughtered and buried in the infected portion of the yards. Even though no infection had been discovered in the Union Stock Yards outside the stocker and feeder division, the entire yards were closed November 6, 1914, for cleaning and disinfection, and remained closed until the work was finished November 16, 1914. It was important to eliminate this prolific source of infection as soon as possible. The Stock Yards Company employed 1,800 men and provided 146 lines of disinfecting hose in addition to their splendid cleaning and flushing facilities, and in order that the work might progress unretarded at night, an elaborate temporary lighting system was installed.

After the infection of foot and mouth disease reached the Chicago stock yards it was rapidly disseminated from there between October 19 and 29 to various states, and the prospect of successfully eradicating this outbreak became most discouraging. However, by diligently and persistently pursuing the policy of eradication adopted in the beginning, all centers of infection were gradually eliminated and by June 18, 1915, all known infected and exposed animals had been slaughtered and the disinfection of premises completed, and it appeared that the disease was eradicated.

On July 28, however, infection was discovered in Steuben County, New York. Seven herds were slaughtered in this county. On August 8 it was discovered that some infected hog cholera serum had been used in treating eight herds of swine in Illinois, one in Minnesota, one in Michigan, and one in Indiana. The disease developed in five herds in Illinois, one in Indiana and Minnesota. The remainder of the eleven herds was slaughtered before the disease had time to develop. The infected herds were promptly slaughtered and buried, and fortunately the disease in Indiana and Minnesota did not spread beyond the originally infected herds. The outbreak in Illinois was confined to that state, and the last affected herd that contracted the disease in the ordinary manner was slaughtered February 16, 1916. On May 2, 1916, however, the disease appeared in some of the animals that had been placed on a farm in Christian county to test the efficiency of the cleaning and disinfection. This outbreak was not entirely unexpected as the cleaning and disinfection had been done under very unfavorable weather conditions. This was the last herd slaughtered in the 1914-15 outbreak of foot and mouth disease, and it is believed the disease has been completely eradicated.

Considering that the outbreak appeared first in a densely populated live stock community in the Central West; that within thirty days after the disease was diagnosed it had been carried to both the Atlantic and Pacific coasts and affected herds had been found in seventeen states and the District of Columbia; that before its progress was stopped it had spread to twenty-two states and the District of Columbia, and it had even appeared on the ranches of Montana, the eradication of this extensive outbreak is an achievement that has not been paralleled in any other country, and this great service to the live stock industry will be appreciated more in the future than it is at present.

The accompanying table gives the statistics of the outbreak.

FOOT AND MOUTH DISEASE IN THE UNITED STATES, 1914-15.

Statement Showing Number of Counties, Herds and Animals Affected and Expenditures in Eradication.

State	Counties	Herds	Cattle	Sheep	Swine	Goats, etc.	Total of all animals	50% approved value animals	50% approved value property	50% cost of burial, disinfection and miscellaneous expense	Totals
Connecticut	3	35	701	--------	175	--------	876	$ 24,183.05	$ 659.64	$ 3,044.20	$ 27,886.89
Delaware	1	12	152	22	49	--------	223	4,033.68	248.00	2,078.21	6,360.09
District of Columbia	------	4	48	--------	39	--------	27	3,569.66	187.00	13.30	3,769.96
Illinois	54	1,226	31,074	1,866	45,550	57: 9 Deer	78,566	1,287,551.34	24,791.49	197,034.19	1,506,377.02
Indiana	20	118	2,437	640	3,973	--------	7,050	90,065.33	659.62	1,433.50	92,158.45
Iowa	9	49	1,547	32	2,335	--------	3,914	62,648.45	664.74	4,830.48	68,143.67
Kansas	4	12	1,218	------	313	--------	1,531	38,048.49	51.93	3,063.75	41,164.17
Kentucky	11	82	2,942	216	866	1	4,025	67,500.28	583.28	7,155.60	75,239.16
Maryland	10	70	1,008	313	1,784	--------	3,105	34,519.19	3,343.30	7,365.14	45,227.63
Massachusetts	9	103	2,066	78	6,088	6	8,238	108,924.07	4,527.97	18,249.60	131,701.64
Michigan	16	272	2,951	818	4,108	--------	7,877	106,166.94	768.43	7,902.12	114,837.49
Minnesota	1	1	25	------	35	--------	60	1,191.90	34.63	80.09	1,306.62
Montana	3	42	1,416	240	11	--------	1,667	33,804.35	77.50	1,001.43	34,883.28
New Hampshire	1	3	78	--------	26	--------	104	2,479.75	139.75	386.63	3,006.13
New Jersey	8	52	1,315	9	815	6	2,145	61,693.75	817.65	4,092.31	66,603.71
New York	21	219	5,737	150	625	33	6,545	238,289.04	3,890.95	15,831.88	258,011.87
Ohio	39	228	4,069	3,070	5,003	--------	12,142	179,985.53	1,420.06	13,647.40	195,052.99
Pennsylvania	34	892	15,294	368	10,634	10	26,306	473,929.12	42,982.47	54,185.62	571,097.21
Rhode Island	3	59	985	33	379	--------	1,397	35,547.75	1,177.13	4,722.28	41,447.16
Virginia	3	9	378	--------	650	--------	1,028	13,871.77	250.22	969.90	15,091.89
Washington	1	1	102	--------	--------	--------	102	2,025.00	------------	------------	2,025.00
West Virginia	3	27	194	148	169	--------	511	6,407.08	654.22	1,331.08	8,392.38
Wisconsin	12	40	1,563	1,764	1,435	1	4,763	59,577.55	1,981.28	7,795.27	69,354.10
Total	266	3,556	77,240	9,767	85,092	123	172,222	$2,932,860.27	$ 90,061.26	$ 356,216.92	$ 3,379,138.51

The above statement shows the amount of money expended by the United States Department of Agriculture, and it is understood that the various infected states paid an equal amount. This statement does not include the salaries, traveling and miscellaneous expenses of Bureau of Animal Industry employees, nor the reimbursement of expenses authorized by Congress to the owners of the Dairy Show Herd.

FOOT AND MOUTH DISEASE IN IOWA, 1914-15.

Foot and mouth disease was evidently introduced into the state of Iowa by three means: The shipment of cattle from the infected Union Stock Yards at Chicago beween the dates of October 19 and 30, 1914; by vaccination of swine with infected hog-cholera virus; and by infection carried by persons and dogs from the neighboring state of Illinois.

Nine counties were infected and forty-nine herds, the property of forty-nine owners, and located on forty-three premises, were slaughtered. These herds were composed of a total of 1,547 cattle, 2,335 swine and thirty-two sheep. The appraised value was $125,296.90. The burial and disposal of the carcasses, disinfection of premises, and miscellaneous expenses of the men employed, and property was destroyed in disinfection to the amount of $1,329.48, making a total of $136,287.34, which was shared equally by the state and the United States Department of Agriculture.

The first discovery of infection in the state was made on November 5, 1914, in the county of Iowa. Five other counties were infected in November and three in February.

Final disinfection in the state was concluded on March 22, 1915.

IOWA BY COUNTIES.

BUCHANAN.—Infection discovered February 15th, 1915. Three herds, three owners, three premises.

Source of infection of first herd slaughtered in Buchanan county is unknown, but is believed to have been carried into the state by a visitor from Whiteside county, Illinois. Both remaining herds were infected directly or indirectly through the first herd slaughtered, one by infection probably carried by dogs, and the second through exchange of work by the owners. Disinfection in this county was completed March 13th, 1915.

CEDAR.—Disease was discovered November 15, 1914. Ten herds, ten owners, nine premises.

The first herd slaughtered in this county was infected through the shipment of 30 head of cattle, shipped from the Union Stock Yards at Chicago on October 30, 1914. These cattle came through the Stanwood (Iowa) yards of the Chicago & Northwestern railroad, and two herds of swine in the yards were infected as a result. Two herds slaughtered in this county were infected as a result of vaccination for hog cholera, with infected virus, and the remaining five herds were infected through neighborhood visiting, dogs, poultry, crows, etc. Final disinfection, January 9, 1915.

DUBUQUE.—Disease discovered February 7, 1915. One herd, one owner, one premises.

Source of infection unknown but possibly the result of infection carried by persons from Whiteside county, Ill. Disinfection completed March 2, 1915.

CLINTON.—Disease was discovered November 12, 1914. Five herds, five owners, five premises.

First herd slaughtered infected through shipment of 25 feeder cattle from Chicago on October 23. In January, 1915, this county became re-infected, probably through dogs and crows from Whiteside county, Illinois, which were attracted to the premises afterwards found infected, by the carcass of a horse. Three other herds were infected through this latter premises by neighborhood visiting. Disinfection was completed February 22, 1915.

IOWA.—Disease was discovered November 5, 1914. Nine herds, nine owners, nine premises.

A lot of cattle shipped from Chicago on October 21, 1914, consisting of 34 animals, was divided, going to four owners. Two other herds were infected through these by contact, and three others by neighborhood visiting. Disinfection in this county was completed January 18, 1915.

JACKSON.—Disease was discovered November 13, 1914. Ten herds, ten owners, eight premises.

First herd slaughtered was infected by 36 feeder cattle purchased in Chicago, October 20, 1914. Three other herds were infected through direct contact. One herd, slaughtered in December, source of infection unknown, but probably in some manner from Jones county. An outbreak in January was attributed to the employment by a stock buyer of a man from northern Illinois and southern Wisconsin. Five herds which he visited were afterwards found infected. Another herd was infected by contact with one of the five. Disinfection in this county was completed February 25, 1915.

JOHNSON.—Disease was discovered November 21, 1914. One herd, one owner, one premises.

Thirty-two feeder cattle shipped from Chicago, October 19, 1914, brought the disease to this county. Disinfection was completed November 25, 1914.

JONES.—Disease was discovered November 8, 1914. Seven herds, seven owners, seven premises.

County infected by importation of 26 feeder cattle shipped from Chicago via Oxford Junction (Iowa) on October 28, 1914. Five other herds were infected through this one by contact, dogs, etc. One herd slaughtered in this county was evidently infected by neighborhood visiting from Jackson county. Disinfection was completed February 23, 1915.

LINN.—Disease was discovered February 28, 1915. Two herds, two owners, two premises.

Source of infection of first slaughtered herd a mystery. One herd infected through use of breeding animals. Disinfection was completed March 22, 1915.

The live stock industry of Iowa was confronted with the greatest and gravest menace in its history when foot and mouth disease appeared in the state. Never before had there been an outbreak of the disease so far west nor in a state where susceptible animals were so numerous. The department and state officials charged with the responsibility of directing the fight against this outbreak were deeply conscious of the importance of adopting measures that would be prompt and effectual. It was realized that if the outbreak were to get beyond control it would result in incalculable losses, as Iowa ranks as the greatest live stock producing state in the Union. The fact that the disease was completely eradicated from the state in a little over four months at comparatively small cost is sufficient proof that the policy pursued was both prompt and effectual. The live stock producers of Iowa have reason to consider themselves fortunate in escaping a more extensive and prolonged outbreak, and the state live stock sanitary authorities deserve credit for the energy and intelligence they displayed in handling the difficult situation. Their task was made more difficult because of differences of opinion in regard to quarantine methods that should be applied, complaints from those whose financial interests were necessarily affected, requests from influential persons in the infected district for special favors, and the embarrassment caused by attempts to use political pressure to the detriment of the work.

Iowa has been free from foot and mouth disease since March, 1915, and there is no reason to believe that there is any harbored infection within its borders. Had it not been for the splendid co-operation received from the Governor of the state, the Animal Health Commission, and the state veterinarian, the eradication of foot and mouth disease from Iowa would have been very difficult, if not impossible to accomplish.

FOOT AND MOUTH DISEASE IN IOWA, 1914-15.

Record of Herds Affected, Stock Slaughtered and Cost of Eradication in Iowa.

Owner and Address	Date diseases discovered	Animals slaughtered	Cleaned and disinfected	Stock Slaughtered			Appraised value	Cost of burial	Cost of property destroyed	Cost of cleaning and disinfecting	Total
				Cattle	Sheep	Swine					
BUCHANAN COUNTY.											
Polark, F. Jr., Hazelton	3- 5-15	3-11-15	3-11-15	45	------	38	$ 2,275.00	$ 125.35	$ 294.50	----------	$ 2,694.85
Schmidt, T. J., Independence	2-15-15	2-18-15	3- 2-15	21	------	86	1,017.00	95.15	41.00	78.00	1,231.15
Sachtschale, Hazleton	3- 2-15	3- 5-15	3-11-15	24	------	11	2,000.00	143.87	97.80	154.80	2,396.47
CEDAR COUNTY.											
Boling and Gehrils, Stanwood	11-26-14	11-28-14	11-30-14	------	------	18	455.95	22.80	----------	----------	478.75
Davidson, A. B., Stanwood	11-26-14	11-28-14	11-30-14	------	------	13	296.66	----------	----------	----------	296.66
Dorcas, H. A., Tipton	11-25-14	11-28-14	12-10-14	27	------	42	1,923.00	73.25	10.00	28.00	2,034.25
Eiselstein, P., Tipton	12- 4-14	12- 9-14	12-20-14	22	------	89	1,758.46	126.25	40.00	----------	1,924.71
Kreinbring, C. W., Tipton	12-31-14	2- 5-15	2- 9-15	69	------	144	5,733.25	329.65	73.60	116.00	6,252.50
Maley, S. A., Stanwood	11-15-14	11-18-14	11-18-14	30	------	------	1,380.00	62.20	----------	----------	1,442.20
Mathews, L. A., Tipton	11-25-14	11-28-14	12-19-14	------	------	223	1,972.50	44.50	----------	----------	2,017.00
Mathews, J. P. and Son, Tipton	12- 3-14	12-12-14	12-19-14	100	------	35	13,086.60	435.50	----------	66.25	13,588.35
Schroeder, C., Tipton	12-27-14	12-31-14	1- 8-15	34	------	65	2,086.50	203.20	15.00	100.25	2,405.25
Simmermaker and Hanna, Tipton	12-17-14	12-23-14	12-29-14	83	------	202	9,708.68	310.55	58.00	62.25	10,139.48
CLINTON COUNTY.											
Dohrmann, E., Lost Nation	2-12-15	2-16-15	2-22-15	35	------	15	1,645.00	129.10	65.00	148.75	1,987.85
Holstein, Wm., Lost Nation	2- 1-15	2- 8-15	2-20-15	63	------	19	3,934.50	222.55	43.50	140.00	4,340.55
Kelly, Lee C., Clinton	11-12-14	11-16-14	11-16-15	25	------	------	1,791.00	57.50	----------	----------	1,848.50
McDevitt, F., Charlotte	1- 7-15	1-11-15	1-25-15	22	------	103	2,605.00	176.75	134.14	221.30	3,137.19
Troy, Jno., De Witt	1-31-15	2- 5-15	2-15-15	35	------	------	3,000.00	129.75	----------	272.00	3,401.75

DUBUQUE COUNTY.											
Broessel, O., Epworth	1- 7-15	2-17-15	3- 2-15	34	------	64	2,875.00	167.10	30.00	119.00	3,191.10
JACKSON COUNTY.											
Bowling, M. S., Iron Hills	11-13-14	11-21-14	11-25-14	47	------	------	3,599.50	165.50	----------	----------	3,765.00
Brady, P. S., Bernard	1-30-15	2-9- 15	2-16-15	46	------	44	1,670.68	187.13	60.00	99.00	2,016.81
Clark, Wm., Iron Hills	11-13-14	11-21-14	11-21-14	3	------	------	75.00	----------	----------	----------	75.00
Edwards, J., Iron Hills	11-21-14	11-21-14	11-21-14	2	------	------	120.00	----------	----------	----------	120.00
Fayram, A. J., Monmouth	12-10-14	12-23-14	12-31-14	59	21	140	5,725.28	158.89	----------	52.00	5,936.17
Federspiel, J., Bernard	1-14-15	1-26-15	2- 9-15	73	------	195	12,133.25	121.63	105.00	209.80	12,569.68
Grace, P. W., Bernard	1-31-15	2- 9-15	2-17-15	56	------	58	3,907.50	112.38	35.00	88.00	4,142.88
Streets, T. W., Iron Hills	11-26-14	11-26-14	11-26-14	------	------	37	473.50	31.00	----------	----------	504.50
Lynch Bros., Bernard	1-30-15	2- 9-15	2-19-15	34	------	73	2,727.50	207.78	15.00	99.00	3,049.28
Hyde, Robt., Bernard	2-20-15	2-23-15	2-25-15	4	------	3	310.00	6.00	----------	26.50	342.50
JOHNSON COUNTY.											
Moran, Jno., Tiffin	11-21-14	11-21-14	11-21-14	32	------	------	2,420.00	74.07	----------	----------	2,494.07
JONES COUNTY.											
Hall, Wm. D., Oxford Junction	11-29-14	12- 2-14	12-10-14	17	------	75	1,469.20	24.00	----------	46.00	1,539.20
Kula, Louis, Oxford Junction	12-11-14	12-12-14	12-13-14	1	------	------	90.00	2.00	----------	----------	92.00
Lehner, J. F., Cascade	2- 7-15	2-14-15	2-23-15	38	------	28	3,285.00	121.38	45.00	116.00	3,567.38
Lathrop, N. B., Oxford Junction	11- 8-14	11-17-14	12- 5-14	110	8	142	6,552.50	79.00	----------	49.00	6,680.50
Miller Bros., Oxford	11-26-14	11-29-14	11-29-14	16	------	------	728.00	19.00	----------	----------	747.00
Sazma, M., Oxford Junction	11-21-14	11-24-14	12- 8-14	12	------	77	1,571.00	25.00	----------	31.00	1,627.00
Skinner, Jas., Oxford	11-24-14	11-24-14	12- 7-14	24	3	26	1,279.00	43.00	60.50	49.00	1,431.50
IOWA COUNTY.											
Gallagher, G. F., Williamsburg	11- 5-14	11-13-14	11-28-14	33	------	------	1,324.00	62.50	----------	----------	1,386.50
Iberg, Henry, Williamsburg	12-28-14	1- 5-15	1-18-15	42	------	84	2,445.62	102.45	97.61	60.00	2,705.68
Menary, J. C. and W. C., Williamsburg	11-16-14	11-22-14	12-14-14	46	------	116	3,422.00	49.00	20.00	46.00	3,537.00
Menary and Evans, Williamsburg	11-17-14	11-25-14	11-28-14	46	------	------	2,615.50	104.25	----------	----------	2,719.75
Manor and O'Donnell, Williamsburg	11-22-14	11-28-14	12- 2-14	16	------	------	1,040.00	32.00	----------	----------	1,072.00
Monnett, J. J., Williamsburg	11-23-14	11-28-14	12- 9-14	6	------	25	670.50	16.00	35.00	15.00	736.50
Scanlon, Dan, Williamsburg	11- 5-14	11-12-14	11-30-14	29	------	18	1,684.75	45.25	27.00	14.00	1,771.00
Stephens, J. F., Williamsburg	11-14-14	11-22-14	11-23-14	47	------	------	2,034.00	75.50	----------	----------	2,109.50
Watkins, R., Williamsburg	11- 5-14	11-13-14	11-28-14	1	------	------	77.50	----------	----------	----------	77.50
LINN COUNTY.											
Daniels, Thos., Springville	2-28-15	3- 3-15	3-11-15	25	------	17	1,640.00	51.50	41.80	105.70	1,839.00
Larson, Mike, Springville	3-19-15	3-20-15	3-22-15	11	------	4	636.00	25.00	15.00	44.00	720.00
Totals	----------	----------	----------	1,547	32	2,329	$125,270.88	$4,796.23	$1,459.45	$2,656.90	$ 134,183.46

ERADICATION OF HOG CHOLERA THROUGH SANITARY MEASURES.

It is quite evident that to eradicate cholera from our country, it is necessary for us to continue in a state-wide educational campaign, as has been started by federal and state authorities and veterinarians throughout the country.

There seems to be a lack of co-operation between the farmers and veterinarians in many cases, for too often when an outbreak of cholera occurs, nothing more is done than to vaccinate the apparently healthy hogs, letting those die that show sickness, without any attempt to isolate the sick to keep them from spreading the natural virus over the entire premises. Often, farmers having infection on their places will show lack of interest in cleaning up and disinfecting, and thereby keep their places infected almost continuously, where the active agent lies dormant, ready to attack the new crop of pigs that comes on the next summer, or season.

Causes of outbreaks of cholera are numerous, such as introduction of a male hog on a farm. Infection is very often carried on the shoes of men. Dogs, pigeons, sparrows and crows are also listed as carriers. Hogs having died from cholera, when left lying near streams, will cause the infection to be carried along the water course.

I recall a case that came to my attention a few years ago, where a herd of seventy-five head which had died from cholera were buried in a tile drain. It so happened that, while the farmer was having some tiling done near his barn yard, his hogs became sick with cholera and died. They were all buried in the ditch.

Farmers are sometimes called to help their neighbors haul hogs to market which have become infected, a practice which should be discouraged. They seldom disinfect their wagons after hauling sick hogs, and thereby bring cholera into their own herds. Farmers will walk through infected stock yards and then go home and walk through their own hog yards, without pretending to disinfect their shoes. Farmers should refuse to allow any shipper into their hog yards unless his shoes are disinfected with a strong disinfectant.

It is claimed by some that virus given simultaneously for immunization may infect the premises. Yet, as a matter of fact, larger amounts of virus are used each year. It is estimated that over a million and a half c. c.'s of virus have been used each year since 1913, and yet, in the face of all this, the conditions are very satisfactory, cholera having decreased year by year.

Much has been said and written in regard to cleaning up and disinfecting places after an outbreak has occurred. Yet, how little is being done today! We, as veterinarians and sanitarians, should not neglect this very important phase of eradication. We should cooperate in every possible manner with our State Animal Health Board to see that the rules established by them are strictly enforced. It should be made compulsory for farmers to burn all dead hogs within a very short time after death. All litter and manure in hog pens and yards should be either burned or thoroughly disinfected with a strong dip or slacked lime before it is scattered upon the fields. Buildings in which sick or dying hogs have been kept should be disinfected, for it is usually in such places that the hog cholera germ is kept alive for the longest period of time, for these sheds are usually dark and damp. The walls should be thoroughly saturated with a very strong disinfectant, and if the floors are of dirt, there should be several inches of the top removed, and a heavy coating of lime applied. Then it should be refilled with dirt to the thickness that has been removed. All litter and cobs scattered over the hog yards should be raked up and burned. Veterinarians should not leave an infected place without washing their hands and disinfecting their shoes before entering their vehicles. The importance of this feature should be impressed upon the farmer so that he may do likewise. There is no doubt that cholera has many times been carried from one farm to another in this way. Unless a veterinarian is sure that his shoes are free from infection, he should not step inside any farmer's hog lot. He should always carefully protect the interest of his client in every way possible.

On account of the crop condition in the past year, many stock hogs were shipped from the frost-stricken districts to other parts of the country which were less affected by frost. Many of these hogs came from Minnesota and Wisconsin. In some cases where shipments were interstate, the Iowa law, which requires that hogs from other states shipped into Iowa must be vaccinated either with the single treatment immediately before shipment or the double treatment twenty-one days prior to the time of shipment, was disregarded. These hogs were driven through infected stock yards and shipped in infected cars, and consequently, in the course of two or three weeks after arriving at their destination, many outbreaks appeared.

In a number of cases where interstate shipment was made, railroads notified the veterinary department, which caused them to be vaccinated upon their arrival; but a large number was shipped from points within the state and were not vaccinated. This was the cause of many new centers of infection in localities that previously had been free. It is unfortunate that the Iowa state laws do not require that all hogs shipped from one point to another within the state must be vaccinated just the same as if they were shipped in from another state.

If the quarantine and shipping regulations, recommended by the Commission on Uniform Methods for the Control of Hog Cholera at the United States Live Stock Association in December, 1913, were adopted and strictly enforced, the loss could readily be reduced to a minimum. These rules have been published in other periodicals, but I give them again, as I consider them of great importance.

1. The shipment or movement, interstate, of swine affected with hog cholera to be prohibited.

2. Exposed swine to be shipped under permit and placarded.

3. The movement of cholera-infected swine over the public highways of the state to be prohibited.

4. Provision for moving exposed swine under permit in approved manner.

5. Carcasses of animals and particularly of swine that have died of cholera, to be burned within twenty-four hours after death, or under special permit to be disposed of otherwise.

6. The shipment of swine by rail for purposes other than immediate slaughter to be permitted only through special pens and unloading chutes, or through portable chutes directly into wagons. If unloaded in regular loading pens, to be moved under permit in approved manner.

7. Public stockyards to be under close supervision and cleaned and disinfected at intervals determined by the proper state authorities.

8. Railway cars for the transportation of swine, other than such as are intended for immediate slaughter, to be cleaned, washed and disinfected before swine are loaded.

9. All cars in which diseased swine are found, or in which exposed swine were shipped for immediate slaughter, to be cleaned, washed and disinfected within twenty-four hours after unloading, or cars to be held until the presence or absence of disease has been determined.

10. All cars or vehicles carrying cholera-exposed swine, to be placarded in a conspicuous manner, "Cholera-Exposed Swine for Immediate Slaughter."

11. Owners of swine and persons in charge, including attending veterinarians, to report without delay to state authorities all outbreaks of cholera among swine.

12. Livestock sanitary authorities to quarantine all infected herds and premises, but may permit shipment of exposed swine for immediate slaughter, as above provided.

13. Infected premises to be quarantined not less than sixty days after last traces of disease have disappeared, and premises have been cleaned and disinfected.

14. Infected premises to be cleaned and disinfected under supervision prescribed by livestock sanitary authorities.

15. The live stock sanitary authorities to be given power to provide in a practicable manner against the dangerous pollution of streams with hog-cholera virus, and provide for the safe disposal of garbage liable to be infected with hog-cholera virus.

16. To prevent the spread of hog cholera by swine shown for exhibition purposes, such swine to be treated with serum and virus not less than twenty-one days prior to the opening date of the exhibit, or with serum alone, not more than fifteen days before such time.

17. Provision for controlling for thirty days, by quarantine or otherwise, when deemed advisable by the proper authorities, of all swine treated with serum-virus, or premises on which such swine are kept, to prevent danger of possible spread of infection from inoculated animals.

If we would do nothing more than to pass laws that strictly enforce these rules, passed by this association, we could reduce the loss of hog cholera from millions each year to a very small amount.

The question of eradication evolves itself into the willingness of the farmer and stock raiser to co-operate with the State Animal Health Board in passing laws along scientific sanitary lines, but just so long as they continue to fight all laws and regulations laid down by state and federal boards (as has been done in the recent fight against foot and mouth disease here and in our neighboring states), just so long will hog cholera continue to kill millions of dollars' worth of hogs each year. But as soon as all parties interested will be willing to get together and work in unison, just so soon will we be able to entirely eradicate this disease from our country.

DOURINE.

Early in October, 1915, the existence of Dourine was suspected in some horses in the southern part of Carroll County. Samples of blood sera were sent to the Bureau of Animal Industry, U. S. Department of Agriculture, at Washington, D. C., and on October 30, 1915, this department was notified from Washington that the blood samples gave positive reaction to the compliment fixation test indicating the existence of Dourine.

In co-operation with the Bureau of Animal Industry this department made investigation, studied the stud books of the community, and tested every stallion, mare and jack that were known to have been exposed to the infection. In addition to this, all stallions and jacks in Carroll and Crawford Counties, and those in the southwestern townships of Greene County, the northwestern townships of Guthrie County, and the northern townships of Audubon County were subjected to the compliment fixation test. Samples of blood sera from all the animals were forwarded to the Laboratories of the Bureau of Animal Industry, where the tests were made and results promptly reported. In all, 229 original tests were made and a number of the animals were retested.

The outbreak is now under control. Some of the infected animals have died in quarantine, the remainder of the infected animals are under quarantine and will be disposed of as soon as the legislature can provide sufficient appropriation to bear half of the appraised value and burial expenses, the department at Washington paying the other half.

LIVE STOCK IMPORTED INTO IOWA.

Number of Animals Imported and States from Which They Came, July 1, 1914, to June 30, 1916.

State	Horses	Mules	Dairy and breeding	Stockers	Hogs	Sheep
Alabama	31					
Arkansas	32		3		1,487	
Arizona	7					
California	10		7		1	
Colorado	218	14	51	114		
Florida	3	3				
Georgia			40			
Idaho	3					
Illinois	5,918	433	856	3,736	698	41
Indiana	91	17	198		6	1
Kansas	316	64	114	299	3,493	2
Kentucky	2		92		16	
Louisiana	15	4	3			
Massachusetts	2		1			
Michigan	8	4	4			
Minnesota	2,062	91	2,559	27,2[illegible]8	3,565	56
Mississippi	2					
Missouri	1,536	1,154	3,604	47,436	13,030	262
Montana	276	26	519	756	1,238	10,382
Nebraska	2,949	450	1,054	202,830	2,848	984
New Mexico	3	1	7			838
New York	3		4			
North Dakota	436	1	118	87	320	1
Ohio	105		34		16	41
Oklahoma	203	46	90		5	
Oregon	39			8	106	
Pennsylvania		3	12			
South Dakota	1,388	83	480	292	675	
Tennessee	41	13	351			

LIVE STOCK IMPORTED INTO IOWA—Continued

State	Horses	Mules	Dairy and Breeding	Stockers	Hogs	Sheep
Texas	113	46	14	----------	----------	303
Utah	27	----------	----------	----------	----------	----------
Vermont	3	----------	66	----------	----------	----------
Virginia	3	----------	1	----------	----------	----------
Washington	1	----------	2	----------	----------	----------
West Virginia	----------	----------	----------	----------	----------	----------
Wisconsin	363	8	----------	247	84	----------
Wyoming	222	24	5	15	149	1,231
Canada	220	2	36	2	451	----------
Totals	16,621	2,483	10,325	283,090	28,498	13,839

LIVE STOCK EXPORTED FROM IOWA.

Number of Animals Exported and Destination Between July 1, 1914, and June 30, 1916.

State	Horses	Mules	Dairy and breeding	Stockers	Hogs	Sheep
Alabama	30	2	192	----------	55	1
Arizona	5	----------	189	----------	23	----------
Arkansas	119	5	27	----------	40	1
California	92	----------	123	----------	77	----------
Colorado	962	30	625	----------	56	8
Connecticut	667	----------	1	----------	----------	----------
Florida	5	12	2	----------	6	----------
Georgia	2	2	177	----------	13	----------
Idaho	108	4	297	----------	16	----------
Illinois	839	18	4,309	800	501	41
Indiana	79	----------	63	95	209	3
Kansas	817	29	400	499	6	----------
Kentucky	3	----------	18	----------	16	----------
Louisiana	37	3	64	----------	54	----------
Maine	384	----------	----------	----------	----------	----------
Maryland	18	2	12	----------	2	----------
Massachusetts	27	----------	----------	----------	8	----------
Michigan	502	4	70	56	26	----------
Minnesota	15,596	328	8,723	333	4,934	267
Mississippi	35	----------	159	----------	15	1
Missouri	603	45	1,579	265	316	129
Montana	1,567	67	1,322	73	155	6
Nebraska	2,127	140	2,539	3,687	1,540	99
Nevada	6	----------	156	----------	----------	----------
New Jersey	3	----------	1	----------	4	----------
New Mexico	19	----------	195	----------	9	1
New York	572	----------	95	----------	15	2
North Carolina	1	----------	3	----------	8	----------
North Dakota	2,918	95	1,333	----------	403	69
Ohio	33	----------	76	30	34	----------
Oklahoma	376	41	503	----------	57	1
Oregon	46	----------	69	----------	13	----------
Pennsylvania	121	2	7	----------	77	----------
Rhode Island	31	----------	----------	----------	----------	----------
South Carolina	----------	----------	13	----------	7	----------
South Dakota	3,700	100	4,725	850	2,065	345
Tennessee	20	1	[illegible]	----------	20	1

LIVE STOCK EXPORTED FROM IOWA—Continued

Seate	Horses	Mules	Dairy and Breeding	Stockers	Hogs	Sheep
Texas	164	28	722	----------	59	2
Utah	17	2	113	----------	8	----------
Vermont	56	----------	----------	----------	----------	----------
Virginia	----------	----------	40	----------	12	----------
Washington	16	1	97	----------	15	----------
West Virginia	2	----------	2	----------	2	----------
Wisconsin	3,127	40	1,459	----------	497	----------
Wyoming	538	32	1,274	----------	64	----------
Canada	1,204	----------	5	----------	2	----------
South America	----------	----------	1	----------	----------	----------
Totals	37,600	1,024	32,015	6,688	11,460	1,241

RESULTS OF VETERINARY EXAMINATIONS.

Under the veterinary practice act, the examining board is required to meet at least twice a year, which is as often as practical. However, this makes it necessary for many veterinarians to wait considerable time to qualify, and, according to law, they cannot enter into practice until they have been registered. This difficulty could be met by a clause providing for a temporary permit upon presentation of proper credentials. Other changes, such as a reciprocity clause and a clause providing that no person who has not registered in accordance with the provisions of the original veterinary practice act, shall be permitted to practice or represent themselves to be a veterinarian.

Many inquiries have been received regarding credentials necessary to qualify for examination under the veterinary practice act of the state of Iowa. It seems many are led to believe that a course in a veterinary correspondence school or even a few years' services with a practicing veterinarian is all that is required.

The veterinary examining board have adopted as a standard the following list of colleges recognized by the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C., and which is also accepted by most state veterinary examining boards:

Alabama Polytechnic Institute, College of Veterinary Medicine.
Chicago Veterinary College.
Cincinnati Veterinary College.
Colorado State College, Division of Veterinary Medicine.
George Washington University, College of Veterinary Medicine.
Grand Rapids Veterinary College (2).
Indiana Veterinary College.
Iowa State College, Division of Veterinary Medicine.
Kansas City Veterinary College.

Kansas State Agricultural College, Veterinary Department.
McKillip Veterinary College.
Michigan Agricultural College, Division of Veterinary Science.
New York-American Veterinary College.
New York State Veterinary College.
Ohio State University, College of Veterinary Medicine.
St. Joseph Veterinary College (3).
San Francisco Veterinary College.
State College of Washington, Veterinary Department.
Terre Haute Veterinary College.
United States College of Veterinary Surgeons (4).
University of Pennsylvania, School of Veterinary Medicine.
University of Toronto, Ontario Veterinary College (to include only those graduated during or prior to 1897).

Graduates of the following named colleges which are not now in session will be admitted to examination:

American Veterinary College, New York, N. Y.
Columbia Veterinary College, New York, N. Y.
Columbian University, Veterinary School, Washington, D. C.
Harvard University, School of Veterinary Medicine, Boston, Mass.
McGill University, Veterinary Department, Montreal, Canada.
National Veterinary College, Washington, D. C.

Graduates of the following named foreign colleges will be admitted to examination:

Glasgow Veterinary College, Glasgow, Scotland.
Royal Veterinary College, London, England.
Royal Veterinary College of Ireland, Dublin, Ireland.
Royal (Dick) Veterinary College, Edinburgh, Scotland.
The New Veterinary College, Liverpool, England.
Veterinary College of Lemberg, Austria.
University of Melbourne Veterinary School, Melbourne, Australia.

1. This list is subject to change. The failure of any college to comply with the provisions of the regulations will necessitate removal from the list.

2. To include only those graduates who have pursued the study of veterinary medicine at this college or in some other accredited college for three years.

3. Matriculates of 1910, in addition to the regular course, will be required to take one year's additional instruction at this college. Graduates prior to 1914 will be required to have had one year's practice and to take an additional year's instruction at this college.

4. Graduates of 1910 and 1911 will be required to present a certificate showing attendance for an additional session at this or some other accredited veterinary college.

The following is a statement of veterinary examinations by the veterinary examining board of the Animal Health Commission:

College	July, 1914			January, 1915			July, 1915			January, 1916			Total		
	Examined	Re-examined	Failed	Examined	Re-examined	Failed	Examined	Re-examined	Failed	Examined	Re-examined	Failed	Examined	Re-examined	Failed
Chicago Veterinary College	22	3	4	----	----	----	16	----	4	4	----	----	42	3	8
Iowa State College	15	----	----	----	----	----	14	----	----	----	----	----	29	----	----
Kansas City Vet. College	24	----	----	3	----	----	9	----	2	3	1	1	39	1	3
McKillip Veterinary College	8	----	----	3	----	1	6	----	3	----	2	----	17	2	4
St. Joseph Vet. College	1	----	----	1	----	----	1	----	----	1	----	----	4	----	----
Colorado State College	----	----	----	----	----	----	1	----	----	----	----	----	1	----	----
Grand Rapids Veterinary College	4	----	----	1	----	1	4	----	1	----	----	----	9	----	2
Ohio State Vet. College	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Ontario Veterinary College	3	----	----	----	----	----	----	----	----	1	----	----	4	----	----
Cincinnati Vet. College	----	----	----	----	----	----	1	----	1	----	1	----	1	1	1
Indiana Veterinary College	2	----	1	1	----	1	1	----	1	----	1	1	4	1	4
United States College Veterinary Surgeons	----	----	----	----	----	----	1	----	----	----	----	----	1	----	----
Kansas State College	----	----	----	1	----	----	----	----	----	----	----	----	1	----	----
Terre Haute Vet. College	----	----	----	----	----	----	----	----	----	1	----	----	1	----	----
Total	79	3	5	10	----	3	54	----	12	10	5	2	153	8	22

FINANCES OF THE DEPARTMENT.

During the Biennial period the financial transactions of the Department were as follows:

SALARY OF STATE VETERINARY SURGEON AND ASSISTANTS AND OF OFFICE FORCE.

(GENERAL PAY ROLL).

State Veterinary Surgeon (2 years)	$ 3,600.00	
Secretary (2 years)	2,400.00	
Stenographer (2 years)	1,800.00	$ 7,800.00
Appropriation for two years for operation of Veterinary Department		$ 2,200.00
Overdrawn account for year ending with June 30, 1914	$ 2,560.38	
Per diem, transportation, hotel and miscellaneous expenses of Department and Assistant State Veterinarians for year ending with June 30, 1915	8,429.71	
Per diem, transportation, hotel and miscellaneous expenses of Department and Assistant State Veterinarians for year ending with June 30, 1916	11,485.77	$22,475.86
Account for Biennial period ending with June 30, 1916, overdrawn		$ 475.86
There was received for examination and practice certificate renewal fees and sale of Veterinary Registers for the Biennial period ending June 30, 1916		$ 3,916.00
Salary Animal Health Commission for Biennial period ending with June 30, 1916	$ 2,737.50	
Transportation, hotel and miscellaneous expenses of Animal Health Commission for Biennial period ending with June 30, 1916	1,030.63	$ 3,768.13
*Balance		$ 147.87

---

*Claims for salary and expenses for Biennial period ending with June 30, 1916, in excess of balances were filed with State Board of Audit July 1, 1916.

HOG CHOLERA CONTROL WORK IN DALLAS COUNTY.

BY J. R. MOHLER, ACTING CHIEF OF BUREAU OF ANIMAL INDUSTRY.

The work of hog cholera control in Dallas county was instituted in July, 1913, in co-operation with the state authorities, with the use of free serum, administered by bureau veterinarians, to demonstrate the possibility of reducing hog cholera losses by quarantine and sanitary measures in connection with the preventive serum treatment, and to work out a plan that might be applied for state-wide hog cholera control work.

Surveys from time to time indicate that in 1913 there were 118,550 hogs raised in the county, and that there were 324 outbreaks of hog cholera with a total loss of 12,000 hogs or 10.1 per cent.

In 1914 there were 138,320 hogs raised and 302 outbreaks of hog cholera resulting in a loss of 6,810 or 4.9 per cent.

During the year 1915 there were 124,540 hogs raised, with only 60 outbreaks of hog cholera and 1,240 hogs lost, or nine-tenths of one per cent.

In connection with these experiments in Dallas county during the three years, the bureau treated 25,350 hogs in infected herds, with a loss of 4,231 or 16.8 per cent, notwithstanding the fact that 9,510 were sick at the time of treatment. According to general estimates the loss in these infected herds without treatment would have been 85 per cent or 21,547 hogs, which would indicate a saving at the average price during that period of $142,758.00 which represents many times the cost of the work.

It is also reasonable to presume that in the absence of these experiments cholera would have become widespread over the county, whereas our reports indicate that on June 30, 1916, there was no hog cholera in the county. The bureau feels that the success of the work was largely due to the cleaning and disinfecting of stock cars, stock yards, and unloading chutes, the proper disposition of dead animals, and the restrictions placed upon the movement of stock, together with the early application of the preventive serum treatment.

The experiment in Dallas county, as well as those in other states, has served a useful purpose by demonstrating what may be accomplished in this way, but the plan with the use of free serum administered by bureau veterinarians is too expensive to lend assistance to any great portion of even one states, and has therefore been discontinued. It is believed that with the plan now being instituted, under which the various interests share in the expense, hog cholera losses in Iowa will be reduced to a minimum and the disease in time eradicated.

ABORTION IN COWS.

BY DR. PETER MALCOLM, ASSISTANT STATE VETERINARIAN, NEW HAMPTON, IA.

This question is one of great importance to the veterinarian as well as to the breeder of cattle.

Abortion, using the general meaning of the word, is expulsion of the foetus before it is viable. In viewing this subject from a practical point of view it is not necessary to go into the more minute details of the different stages of development of the foetus and the periods when the mishap may occur. The common causes of abortion in cows are due to external injuries, such as one animal butting another, squeezing through narrow places, slipping and falling, kicks from vicious attendants, in fact any injury to the abdomen may produce it.

Causes of a more obscure nature are internal, such as an abnormal or diseased condition of the uterus, inflammation of the bowels, kidney, bladder or lungs, indigestion in the acute or chronic form, evolution of gas in the intestines sufficient to cause an irritation to the uterus or interfere with its circulation, diarrhoea, whether caused by irritant food or reckless use of purgatives. The presence of a calculus in the kidney, ureter, bladder, or urethra, may cause a sympathetic disorder of the uterus and expulsion of its contents, also irritant poisons that act on the urino-genital organs, such as cantharides, savin, tansey, ergot (rye smut), and various fungi found in decomposing vegetable matter.

Another cause, and one of great importance, is bad ventilation, or any like condition that interferes with the normal oxidation of the blood. The importance of keeping pregnant animals in well ventilated stables can be seen at a glance when you take into consideration the condition of their blood, which contains an excess of water and a smaller proportion of albumen and red globules. This condition, aggravated by bad ventilation, decomposing animal and vegetable matter, poor food and stagnant water, is almost certain to produce abortion.

The dam with all the diseases and accidents that may be forced on her is not alone responsible for abortion. To the sire a great deal of this trouble is due, and this should not be lost sight of as he plays a prominent part in the transmission of this disease.

In the first place it is not reasonable to suppose a sire that is overworked can produce a strong and vigorous spermatozoa. No, the conditions are directly opposite and when this weakened spermatozoa comes in contact with the ovum the chemical constituent will be of a debilitated character, which will, if it develops, ultimately cause disease of the foetus or its envelope. Furthermore, this overworked sire is in a condition by the weakened state of his generative organs to furnish a favorable field for the development of vigorous micro-organisms, which, when the act of copulation is performed, are carried to the vagina, and together with the spermatozoa, enter the uterus and there develop, causing disease of the foetus, or its envelope, which may bring about abortion, or if not, the offspring may be diseased.

Another cause, and of great importance, is infection. In some instances its origin is obscure but the majority of outbreaks can be traced to neglected cases of simple or accidental abortion. In this division of the causes it no longer remains a doubt as to the pathogenic agent as science has proven beyond a doubt that it is due to a micro-organism. (I will not attempt to advance any new theory or give a name to this organism as the authors of today are seemingly exploding their theories of yesterday). However, such conditions exist and we are called upon to treat them. To do this successfully it is essential to understand the character and pathological action of this organism. It is a pathogenic microbe, developed in decomposing animal or vegetable matter. Entering the system by way of the respiratory or digestive tract, the vagina, or any abrasion of the skin, gaining access to the blood and causing a putrefactive fermentation, which produces an irritation to the sympathetic system, or death to the foetus.

In the treatment of this disease, or more properly speaking, this diuteropathy requires tact and energy as the conditions and circumstances that favor its progress are numerous and of an obscure nature. To overlook a seemingly trivial condition may cause abortion in a herd.

An essential point to be considered in the preventive treatment, is to see that the sire and dam are in a healthy condition before mating them. The sire should be kept away and not allowed to run with the cows, nor should he be allowed to have intercourse with a cow that has aborted for at least three months, and then only one service, and no day should he serve more than three. In the treatment of the cow, that is, one that has aborted, she should not be bred until after the period at which she would have given birth naturally, for in the majority of cases if they become impregnated they will abort when that period is reached, due to the mental impression that was established by the first impregnation, this condition being better developed the longer she carries the first foetus. As to the treatment of a herd for abortion, do not wait to see if it is going to take on the epozootic form, for delay is dangerous, as one neglected case, no matter what produced it, may cause abortion to every cow in the herd. Therefore, it is very essential to remove the cows that have aborted and thoroughly disinfect them, burn the placenta, destroy the foetus, and all other debris that may become contaminated with the fluids. Disinfect the stable, using carbolic acid. My experience has taught me to believe that carbolic acid is not only a specific in the destruction of this particular microbe, but that it arrests the fermentative changes that favor its development. In using carbolic acid in cases of this nature, two things should be noted: First, that the inhalation of the fumes is necessary in as much as they arrest and destroy germs that may have gained access to the air passages; secondly, that if used too freely it may cause an irritation to the respiratory organs sufficient to produce inflammation of the lungs. A safe formula and one of sufficient strength is carbolic acid one ounce, glycerine one-half ounce, warm water twelve quarts. Give once a day by sprinkling on the hay. This amount is sufficient for twelve cows of average weight.

When abortion starts in a herd to any extent, it is very essential to see that the drinking water does not become contaminated, as the dirt and filth that may be smeared on the tails of the cows that have aborted may be switched into the watering tank and thereby cause the water to be a source of infection. To counteract this condition, put sodium hyposulphite in the drinking water, using three pounds of hyposulphite of soda in a tank that will hold about twenty barrels. Do this twice a week.

PART X

Annual Report of Iowa Weather and Crop Bureau for 1916

GEORGE M. CHAPPEL, Director

This report is issued so that the summaries of the monthly and weekly bulletins issued by the Iowa Weather and Crop Service, in co-operation with the Weather Bureau of the United States Department of Agriculture, may be put in shape for convenient reference and comparison with past and future years.

The regular meteorological, climatological and crop statistical work of the Service has been maintained and kept up to the high standard of efficiency of past years; more than the usual attention having been devoted to the accuracy of the reports and the exposure of instruments.

Twenty-four thousand copies of the monthly Climatological Reports, and 31,000 copies of the weekly Weather Crop Bulletins were issued and distributed during the year. Five hundred of the monthly reports are distributed each month through the Weather Bureau, U. S. Department of Agriculture to scientific institutions and libraries in this and foreign countries.

The daily weather forecasts were distributed by telegraph at the expense of the U. S. Weather Bureau to 82 towns, by franked mail to 1,985 addresses, by rural delivery to 934 addresses, and by free telephone to 114,132 subscribers. Preparation was made to have frost warnings sent, in case of necessity, during the fruit blooming season, to all orchardists in the state who were prepared to use orchard heaters in case of frost or injurious temperatures.

CLIMATOLOGY OF THE YEAR 1916

The year 1916 was slightly cooler and much drier than usual. The mean temperature was 47.2°, or 0.2° below the normal, and the average precipitation was 28.90 inches, or 3.7 inches less than the normal. There were, however, some unusually high temperatures and excessively heavy rainfall. The most marked features in this respect being the high temperatures in July and August, the lowest temperature of record for the first half of November and the excessive rainfall over the northeastern counties on June 1, a report of which was published in the Climatological Data for June. The summer, as a whole, was droughty, and as a result the yield of all small grain was lessened, late potatoes were practically ruined and corn and pasturage were seriously damaged. The autumn was generally pleasant and corn husking began earlier than usual and was practically finished before the end of November.

BAROMETER (reduced to sea level)—The average pressure of the atmosphere for the year was 30.02 inches. The highest pressure was 30.83 inches, at Omaha, Neb., on January 13th and February 13th. The lowest pressure was 29.13 inches, at Keokuk, on March 21st. The range for the state was 1.70 inches.

TEMPERATURE—The mean temperature for the state was 47.2°, or 0.2° below the normal. The highest annual mean was 52.0°, at Keokuk, Lee county. The lowest annual mean was 42.2°, at Estherville, Emmet county. The highest temperature reported was 106°, at Webster City, on August 4th. The lowest temperature reported was —34°, at Inwood, on January 13th. The range for the state was 140°.

PRECIPITATION -The average amount of rainfall and melted snow for the year was 28.90 inches, or 3.07 inches less than the normal, and 10.63 inches less than the average for 1915. The greatest amount at any station was 46.34 inches, at Nora Springs, Floyd county, and the least amount was 22.21 inches, at Alta (near), Buena Vista county. Omaha, Neb., had only 19.46 inches. The greatest monthly precipitation was 10.44 inches, at Burlington, Des Moines county, in May. The least amount was 0.05 inch, at Osage in February, and at Matlock in November. The greatest amount in any 24 consecutive hours was 4.46 inches, at Cedar Rapids, on June 1st. Measurable precipitation occurred on an average of 90 days, 13 days less than in 1915.

SNOWFALL—The average amount of snowfall was 29.5 inches. The greatest amount reported from any station was 61.0 inches at Northwood, Worth county, and the least amount was 10.1 inches, at Lenox, Taylor county. The greatest monthly snowfall was 18.5 inches, at Rockwell City, Calhoun county, in January.

WIND—The prevailing direction of the wind was northwest. The highest velocity reported was 70 miles an hour from the southwest at Sioux City, Woodbury county, on August 6th.

SUNSHINE AND CLOUDINESS—The average number of clear days was 178; partly cloudy, 98; cloudy, 90; as against 144 clear days, 105 partly cloudy, and 116 cloudy days in 1915.

MONTHLY SUMMARIES

JANUARY.

From a climatological point of view, January, 1916, in Iowa was a month of much interest. While the average temperature for the whole state was almost exactly normal, this statement is inapplicable in particular except to a narrow strip extending north and south through the central portion. In the extreme western counties the month was much colder than usual, but was correspondingly mild at the opposite side of the state. Throughout the month sudden and marked variations in temperature were the rule rather than the exception, and cold waves were numerous. An extreme instance of a rapid and sudden change to colder occurred at Davenport on the 5th when the temperature fell from 55° to 1°. With reference to precipitation, the month established a new record by being decidedly the wettest of its name in the 27 years' climatological history of the Weather Bureau in Iowa. Every station in the state reported an excess of moisture, a fact in itself of note. A large percentage of the total precipitation was in the form of rain and sleet. The fall of sleet was the heaviest in years, amounting to about an inch in some districts and was reported somewhere in the state on more than half the days of the month. Moreover, several "ice" storms occurred and at one time the accumulated thickness of ice on trees and other exposed objects averaged three-tenths of an inch. Telegraph, telephone and lighting companies suffered severely in some sections, but as a whole the losses were not so heavy as might have been expected.

The two most striking features of the month were the cold wave of the 12th-13th and a series of sleet and ice storms covering the 25th-29th. The cold wave was one of the severest in recent years and, generally speaking, the minimum temperatures reached were the lowest since the memorable January of 1912. The 12th was one of the most inclement days experienced in years, the conditions closely approaching those of a typical blizzard. Transportation interests were seriously affected, especially trolley service. In some cases business houses closed early in order that employes might be assured of reaching their homes. On the following morning the temperatures ranged from -17° at Keokuk, to -34° at Inwood. The sleet and ice storms already referred to culminated on the 28th and 29th in a fall of rain at temperatures below freezing. Up to that time the several accretions of sleet had formed a mass varying from half an inch to an inch in thickness and this was converted by the freezing rain practically into a layer of ice that covered the entire landscape. Walking became a most difficult undertaking, and accidents as the result of falls occurred by the hundred. In Des Moines the unusual spectacle was witnessed of skating on the golf links and in country districts men skated from farms to town. A fall of snow soon ended the skating but served to greatly relieve the icy conditions underfoot. There was some apprehension as to the effect the ice sheet might have on winter wheat and meadows. While the matter is problematical, it is thought that where the fields are short and the ice lies close to the ground much wheat and some grass will be smothered.

Pressure.—The mean pressure (reduced to sea level) for the state was 30.17 inches. The highest record was 30.86 inches, at Sioux City, on the 13th, and the lowest was 29.36, at the same station, on the 9th. The monthly range was 1.50 inches.

Temperature.—The mean temperature for the state, as shown by the records of 107 stations, was 17.8°, or only 0.1° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 13.5°, or 1.1° lower than the normal; Central, 18.4°, or 0.2° higher than the normal; Southern, 21.5°, or 0.6° higher than the normal. The highest monthly mean was 27.0°, at Keokuk, and the lowest monthly mean was 4.6, at Rock Rapids. The usual January difference in mean temperature between these stations is about 10°. The highest temperature reported was 63°, at Leon, on the 1st, and the lowest temperature reported was -34°, at Inwood on the 13th. The latter is the lowest temperature reported in Iowa since January 12, 1912. The temperature range for the state was 97°.

Humidity.—The average relative humidity for the state at 7 a. m. was 83.7 per cent, and at 7 p. m. it was 80.1 per cent. The mean for the month was 81.9 per cent, or about 0.9 per cent greater than the normal. The highest monthly mean was 88 per cent at Charles City, and the least was 79.5 at Keokuk.

Precipitation.—The average precipitation for the state, as shown by the records of 111 stations, was 2.62 inches, or 1.59 inches more than the normal. By divisions the averages were as follows: Northern, 2.09, or 1.25 inches more than the normal; Central, 2.70 inches, or 1.59 inches more than the normal; Southern, 3.07 inches, or 1.88 inches more than the normal. The greatest amount, 6.07 inches, occurred at Mt. Pleasant, and the least, 0.85 inch, at Lake Park. The greatest amount in any 24 consecutive hours, 1.92 inches, occurred at Ft. Madison, on the 19th.

Snow.—The average snowfall for the state was 7.2 inches, or about the normal amount. The greatest amount, 18.5 inches, occurred at Rockwell City, and the least, 1.3 inches, at Centerville.

Wind.—The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 50 miles an hour from the northwest, at Sioux City, on the 27th.

Sunshine and Cloudiness.—The average percentage of the possible amount of sunshine was 45, or about 4 per cent lower than the normal. The percentage of the possible amount at the several regular Weather Bureau stations being as follows: Charles City, 36; Davenport, 43; Des Moines, 46; Dubuque, 49; Keokuk, 40; Omaha, Nebr., 49; Sioux City, 51.

Rivers.—Heavy rains in the Davenport district on the 20th caused the flooding of creeks and smaller streams. Continued mild weather and further heavy rain on the 26th resulted in rapidly rising stages in the Mississippi, from Le Claire to Muscatine, and the breaking up of the ice at Davenport on the night of the 24th-25th. At that place the ice became gorged below the city, causing a stage of 14.2 feet on the 25th which resulted in the flooding of cellars along the river front with seep water.

Miscellaneous Phenomena.—Thunderstorms occurred over the southeastern counties on the 1st, 20th, 21st and 29th. Sleet occurred on the 1st, 9th, 10th, 11th, 12th, 18th, 19th, 20th, 21st, 24th, 25th, 26th, 27th, 28th, 29th, 30th and 31st. Ice harvest began in the larger streams about the 17th, but was not completed owing to rains and mild weather.

Severe Cold Wave of January 12th-14th, 1916, at Dubuque.—By J. H. Spencer, Local Forecaster. This cold wave was the severest of the winter to date, and one of the severest in years. Temperature at Dubuque fell 49° during the 24 hours ending at 7 a. m. of the 13th, 22° below zero being recorded at that hour. The maximum of the 13th was 12° below zero. During the night of the 13th-14th the temperature remained nearly stationary at 15° below zero, but 17° below was recorded at 8:30 a. m. on the 14th.

On the afternoon and evening of the 12th a blinding snow storm occurred, accompanied by high winds and rapidly falling temperature These conditions caused a partial tieup of local street railway traffic and considerable delay in trains on all the railroads of this section. On the 13th railroad traffic was much interfered with, due to the extreme cold, and some trains were many hours late. On the whole, however, conditions were not bad, and losses were small.

Telegraph and telephone companies experienced very little trouble in this immediate section, but between Freeport, Ill., and Chicago, wires were taken down by sleet on the night of the 12th.

Warnings were given well in advance of the cold wave, and were generally heeded. Railroads, express companies, business houses, etc., prepared for the severe cold, perishable shipments were refused and losses were reduced to a minimum.

COMPARATIVE DATA FOR THE STATE—JANUARY.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Righest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890 -------	19.7	+1.8	61	—27	2.03	+0.98	8.46	0.35	------	----	----	----	----
1891 -------	26.0	+8.1	58	— 4	1.75	+0.70	3.99	0.61	------	4	13	7	11
1892 -------	15.3	—2.6	76	—38	1.09	+0.04	3.13	0.10	6.9	5	16	9	6
1893 -------	9.3	—8.6	54	—34	0.74	—0.31	3.20	0.13	6.9	6	11	9	11
1894 -------	19.3	+1.4	69	—37	1.09	+0.04	2.24	0.31	6.0	5	14	9	8
1895 -------	13.6	—4.3	68	—31	0.85	—0.20	2.65	0.09	8.7	4	15	7	9
1896 -------	23.4	+5.5	68	—20	0.48	—0.57	2.10	T.	2.8	3	10	10	11
1897 -------	17.2	—0.7	66	—30	2.01	+0.96	6.16	0.15	8.2	7	12	7	12
1898 -------	23.4	+5.5	52	—11	1.60	+0.55	5.32	T.	12.6	5	15	6	10
1899 -------	19.8	+1.9	68	—34	0.28	—0.77	1.15	T.	1.5	3	15	10	6
1900 -------	25.6	+7.7	66	—20	0.53	—0.52	2.47	T.	2.3	3	16	7	8
1901 -------	23.7	+5.8	60	—21	0.74	—0.31	2.34	0.04	6.2	4	14	9	8
1902 -------	22.4	+4.5	63	—31	0.88	—0.17	2.83	0.19	9.4	4	17	8	6
1903 -------	23.0	+5.1	60	—12	0.28	—0.77	1.46	T.	2.0	4	13	7	11
1904 -------	14.0	—3.9	57	—32	1.18	+0.13	3.68	0.02	6.1	6	12	8	11
1905 -------	11.2	—6.7	56	—30	0.91	—0.14	1.82	0.12	11.1	7	14	7	10
1906 -------	24.6	+6.7	69	—19	1.52	+0.47	4.71	0.28	11.3	5	14	6	11
1907 -------	18.8	+0.9	68	—22	1.52	+0.47	5.30	0.10	6.0	7	8	7	16
1908 -------	24.9	+7.0	60	—18	0.44	—0.61	1.50	0.06	4.6	2	17	8	6
1909 -------	21.2	+3.3	72	—25	1.66	+0.61	3.74	0.41	7.8	6	9	6	16
1910 -------	18.1	+0.2	56	—35	1.57	+0.52	3.15	0.55	12.6	6	13	7	11
1911 -------	20.2	+2.3	66	—35	0.97	—0.08	3.73	0.11	7.3	5	9	8	14
1912 -------	4.2	—13.7	49	—47	0.53	—0.52	1.90	T.	5.5	5	14	7	10
1913 -------	20.9	+3.0	62	—25	0.77	—0.28	2.05	0.04	7.2	5	14	9	8
1914 -------	27.8	+9.9	64	—10	0.88	—0.17	2.34	0.27	5.1	5	11	8	12
1915 -------	17.5	—0.4	59	—32	1.63	+0.58	3.15	0.10	7.3	8	13	8	10
1916 -------	17.8	—0.1	63	—34	2.62	+1.57	6.07	0.85	7.2	10	12	6	13

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

FEBRUARY.

Despite the fact that the weather was colder than usual, February, 1916, must be classed with the more pleasant and favorable months of that name which are of record for Iowa. A predominance of fair, sunshiny weather, together with an absence both of marked fluctuations in temperature and high winds contributed the features that gave the month the characteristics mentioned above. The month's coldness was almost entirely the result of persistent low temperature during the first two weeks. During that period freezing weather prevailed both day and night throughout practically the whole state. On several mornings the readings were below zero, but, except in the extreme northwestern counties, no abnormally low temperatures occurred. The most pleasant part of the month comprised the ten-day period beginning on the 15th. During that time the temperature was almost continuously above the normal and fair weather was practically unbroken. However, rain and snow fell on Washington's birthday, in the central counties. Rapid melting of snow and ice took place during this mild period, causing high water in streams. In some cases ice jams damaged bridges and caused flooding of lowlands.

So far as is known the winter's ice sheet has caused no material damage to winter wheat and meadows.

Pressure.—The mean pressure (reduced to sea level) for the state was 30.23 inches. The highest recorded was 30.86 inches, at Sioux City, on the 13th, and the lowest was 29.69, at Davenport, on the 26th. The monthly range was 1.17 inches.

Temperature.—The mean temperature for the state, as shown by the records of 105 stations, was 19.0°, or 1.5° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 15.1°, or 2.0° lower than the normal; Central, 19.4°, or 1.3° lower than the normal; Southern, 22.5°, or 1.1° lower than the normal. The highest monthly mean was 25.6°, at Keokuk, and the lowest monthly mean was 11.6°, at Estherville. The highest temperature reported was 61°, at Sioux City, on the 19th, and the lowest temperature reported was -32°, at Rock Rapids, on the 2d. The latter is the lowest temperature reported in February since 1906. The temperature range for the state was 93°.

Humidity.—The average relative humidity for the state at 7 a. m. was 85.4 per cent, and at 7 p. m. it was 77.7 per cent. The mean for the month was 81.6 per cent, or about 2.4 per cent higher than the normal. The highest monthly mean was 87.5 per cent, at Charles City, and the lowest was 78.4, at Omaha, Nebr.

Precipitation.—The average precipitation for the state, as shown by the records of 111 stations, was 0.55 inch, or 0.60 inch less than the normal. By divisions the averages were as follows: Northern, 0.57 inch, or 0.34 inch less than the normal; Central, 0.62 inch, or 0.58 inch less than the normal. Southern, 0.46 inch, or 0.89 inch less than the normal. The greatest amount, 1.38 inches, occurred at Nora Springs, and the least, 0.05 inch, at Osage. These stations are in adjoining counties. The greatest amount in any 24 consecutive hours, 1.15 inches, occurred at Nora Springs, on the 4th.

Snowfall.—The average snowfall for the state was 6.0 inches, or 1.4 inches less than the normal. The greatest amount, 12.0 inches, occurred at Allison, and the least, 0.5 inch, at Osage.

Wind.—The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 44 miles an hour from the northwest, this occurring at Sioux City, on the 26th.

Sunshine and Cloudiness.—The average per cent of the possible amount of sunshine was 60, or about 4 per cent higher than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 48; Davenport, 59; Des Moines, 64; Dubuque, 66; Keokuk, 55; Sioux City, 65; Omaha, Nebr., 63.

Rivers.—The Mississippi at Davenport was at flood stage for several hours on the 2d but a falling stage set in before serious damage occurred. At Dubuque the river was frozen all the month, the ice there ranging in thickness from 12 to 17 inches. During the last week of the month the ice in places broke away from the shore and moved down stream a short distance, but there was no general breakup.

Miscellaneous Phenomena.—The only thunderstorm of the month was reported on the 22d from four stations in the eastern part of the state. Sleet occurred on the 9th, 10th, 11th, 12th, 22nd and 26th. Halos, either lunar or solar, were reported on the 1st, 2d, 3d, 4th, 5th, 7th, 8th, 9th, 10th, 12th, 14th, 15th, 17th, 27th and 29th. Fog occurred on the 1st, 2d, 9th, 10th, 11th, 15th, 17th, 20th, 21st and 22d. The first appearance of robins was on the 18th, at Columbus Junction.

COMPARATIVE DATA FOR THE STATE- FEBRUARY.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890 ------	26.0	+5.5	67	-24	0.83	—0.22	2.18	0.11	------	------	----	----	----
1891 ------	19.4	—1.1	70	-31	1.16	+0.11	2.41	0.55	------	3	13	7	8
1892 ------	28.1	+7.6	68	-20	1.20	+0.15	2.18	0.12	5.0	6	6	7	16
1893 ------	16.4	—4.1	66	-28	1.39	+0.34	2.91	0.06	8.1	6	10	8	10
1894 ------	19.7	—0.8	60	-19	0.89	—0.16	2.41	T	8.4	3	16	8	4
1895 ------	16.4	—4.1	73	-33	0.49	—0.56	1.34	0.02	3.3	4	13	9	6
1896 ------	27.4	+6.9	78	-13	0.71	—0.34	2.40	0.04	5.4	4	12	9	8
1897 ------	24.7	+4.2	61	-24	0.89	—0.16	1.81	0.22	8.0	5	6	10	12
1898 ------	24.2	+3.7	62	-18	1.20	+0.15	3.65	0.10	7.8	5	10	9	9
1899 ------	12.2	—8.3	75	-40	0.89	—0.16	4.32	0.12	7.1	5	11	10	7
1900 ------	14.8	—5.7	60	-27	1.30	+0.25	4.57	0.18	9.9	6	10	8	10
1901 ------	17.5	—3.0	49	-21	1.01	—0.04	3.00	0.12	9.7	4	15	7	6
1902 ------	17.6	—2.9	62	-21	0.73	—0.32	2.39	0.02	2.6	4	13	8	7
1903 ------	19.8	—0.7	56	-21	1.18	+0.13	3.25	0.30	7.9	4	13	7	8
1904 ------	14.8	—5.7	70	-26	0.41	—0.64	1.99	T	4.5	4	10	9	10
1905 ------	12.8	—7.7	69	-41	1.57	+0.52	2.97	0.44	15.5	7	14	6	8
1906 ------	23.6	+3.1	66	-32	1.29	+0.24	2.91	0.20	6.1	5	14	7	7
1907 ------	25.0	+4.5	65	-31	0.71	—0.34	1.95	0.06	4.6	4	14	6	8
1908 ------	24.3	+3.8	59	-16	1.69	+0.64	3.95	0.23	8.9	6	12	6	11
1909 ------	26.2	+5.7	62	-26	1.54	+0.49	4.72	0.30	7.7	5	11	6	11
1910 ------	17.8	—2.7	58	-21	0.46	—0.59	2.09	T	4.0	3	14	8	6
1911 ------	27.3	+6.8	71	-13	2.76	+1.71	5.46	0.50	7.0	6	12	6	10
1912 ------	18.1	—2.4	57	-30	1.21	+0.16	3.25	0.04	11.2	5	10	9	10
1913 ------	20.2	—0.3	70	-24	0.82	—0.23	2.39	0.07	7.3	4	14	7	7
1914 ------	16.8	—3.7	59	-29	0.87	—0.18	1.99	0.32	9.2	6	10	9	9
1915 ------	29.1	+8.6	62	- 8	2.93	+1.88	5.39	0.43	9.4	9	9	5	14
1916 ------	19.0	—1.5	62	-32	0.55	—0.60	1.38	0.05	6.0	4	14	8	7

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

MARCH.

Viewing the state as a whole, the first spring month of 1916 in Iowa was somewhat milder and drier than usual. Over certain portions of the state, however, there were wide departures from these average conditions. In the counties bordering on the Mississippi River the month was little if any milder than the average March, but thence westward across the state the excess of mean temperature showed a progressive increase until at the Missouri River it amounted to an average of 4° a day. The area of deficient precipitation included all except the southeastern and extreme eastern counties; but over parts of the districts named occurred the heaviest March precipitation of record.

The special features of the month were the unseasonably high temperatures on the 12th over the southern half of the state, a six-day period of heavy precipitation over the southeast and extreme east and the storm of the 21st-22d. At Des Moines the temperature on the 12th rose to a higher degree (77°) than ever previously reached so early in the season. The period of heavy precipitation referred to extended from the 21st to the 26th, inclusive. The fall at Washington during that time amounted to 5.56 inches, or all but 0.24 of an inch of the month's total at that station. On the 26th the rainfall there was 4.41 inches, which compares with the heaviest 24-hour amounts liable to occur at any time of the year in Iowa. At Dubuque the precipitation for this period was 3.73 inches, or more than has occurred at that station during any entire March in 39 years. The storm of the 21st-22d in the eastern part of the state was characterized by heavy snow and a thunderstorm of much intensity. Loud thunder and sharp lightning occurred simultaneously with the fall of snow.

The warm weather early in the month started grass to growing, so that by the close some lawns were almost ready for mowing in southern sections. Spring seeding began in southern Iowa except over the wet sections of the southeast, but in the northern part of the state no field work was done. While some reports are conflicting as to the condition of fall-sown grains, there now appears no doubt but that in some sections serious damage has occurred owning to winter killing.

Pressure.—The mean pressure (reduced to sea level) for the state was 29.99 inches. The highest recorded was 30.56 inches, at Keokuk and Sioux City, on the 15th, and the lowest was 29.16 inches, at Davenport, on the 6th. The monthly range was 1.40 inches.

Temperature.—The mean temperature for the state, as shown by the records of 104 stations, was 35.2°, or 1.9° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 31.6°, or 1.1° higher than the normal; Central, 35.4°, or 1.8° higher than the normal; Southern, 38.5°, or 2.6° higher than the normal. The highest monthly mean was 41.8°, at Northboro, a station in the extreme southwestern part of the state, and the lowest monthly mean was 27.8°, at Estherville, in the northwest and near the Minnesota boundary. The highest temperature reported was 80°, at Clarinda, on the 12th; this is about the average highest temperature that occurs during March in Iowa. The lowest temperature reported was -18°, at Algona, on the 2d. On the average a temperature as low as 18° below zero in March is experienced about every 5th year in this state.

Humidity.—The average relative humidity for the state at 7 a. m. was 82.3 per cent, and at 7 p. m. it was 65.3 per cent. The mean for the month was 73.9 per cent, or about 0.4 per cent lower than the normal. The highest monthly mean was 81.0 per cent, at Charles City, and the lowest was 67.2, at Omaha, Nebr.

Precipitation.—The average precipitation for the state, as shown by the records of 110 stations, was 1.57 inches, or 0 20 of an inch less than the normal. By divisions the averages were as follows: Northern, 1.28 inches, or 0.25 of an inch less than the normal; Central, 1.45 inches, or 0.42 of an inch less than the normal; Southern, 1.97 inches, or 0.05 of an inch more than the normal. The greatest amount, 5.80 inches, occurred at Washington, and the least, 0 23 of an inch, at Northboro. The greatest amount in any 24 consecutive hours, 4.41 inches, occurred at Washington, on the 26th.

The average snowfall for the state was 2.9 inches, or 2.5 inches less than the normal. The greatest amount, 10.0 inches, occurred at Elkader and Forest City, and the least, a trace, at 5 stations.

Wind.—The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was at the rate of 58 miles an hour from the northwest, this occurring at Sioux City, on the 6th.

Sunshine and Cloudiness.—The average per cent of the possible amount of sunshine was 58, or about 4 per cent higher than the normal. The per cent of possible amount at the regular Weather Bureau stations was as follows: Charles City, 41; Davenport, 57; Des Moines, 63; Dubuque, 59; Keokuk, 60; Sioux City, 58; Omaha, Nebr., 65.

Miscellaneous Phenomena.—Auroras were observed on the 6th, 7th, 8th, 9th, 10th and 23d. Thunderstorms occurred on the 21st, 22d, 23d, 24th, 25th, 26th, 30th and 31st. Fog was noted on the 1st, 6th, 7th, 9th, 12th, 13th, 25th, 26th, 29th and 30th. Sleet occurred on the 5th, 6th, 11th, 19th, 22d, 24th, 25th and 26th. On the 24th the atmosphere had a smoky appearance.

Rivers.—As a result of the six-day period of heavy precipitation covering the 21st to the 26th the Mississippi at Dubuque rose five and one-half feet in three days, reaching a maximum stage of 12 feet on the morning of the 27th; this is an exceptional rise for the length of time. All small streams, as well, in northeastern Iowa were at flood stage on the 25th and 26th. In the Davenport district the Mississippi rose rapidly as a result of the heavy rains on the 25th and 26th. The crest of the rise reached Davenport on the 30th, with a stage of 12.4 feet, and Muscatine on the 31st, with a stage of 14.8 feet. In Keokuk district the Mississippi and its tributaries, including the lower Des Moines River, reached the flood stage after the 27th, and unprotected lowlands were flooded by the 29th.

COMPARATIVE DATA FOR THE STATE—MARCH

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	28.0	—5.3	75	—24	1.57	—0.20	3.67	0.32	----	--	--	--	--
1891	26.8	—6.5	66	—19	2.60	+0.83	4.58	1.33	----	10	6	8	17
1892	31.9	—1.4	84	— 6	2.22	+0.45	4.58	0.57	3.9	6	11	8	12
1893	31.8	—1.5	84	— 8	2.14	+0.37	4.40	0.64	4.0	8	9	11	11
1894	41.0	+7.7	84	— 5	2.03	+0.26	4.52	0.26	2.7	6	13	10	8
1895	34.4	+1.1	94	—11	0.83	—0.94	2.60	0.22	2.9	4	16	8	7
1896	30.9	—2.4	81	—12	1.10	—0.67	3.99	0.16	5.4	5	12	9	10
1897	32.0	—1.3	72	—22	2.39	+0.62	6.16	0.29	5.5	8	9	8	14
1898	37.5	+4.2	72	— 2	1.94	+0.17	6.21	0.33	3.7	6	12	9	10
1899	23.0	—10.3	75	—16	1.62	—0.15	5.90	0.37	8.0	6	7	12	12
1900	30.7	—2.6	81	—13	2.06	+0.29	5.15	0.45	6.6	5	12	9	10
1901	34.2	+0.9	76	— 8	2.64	+0.87	5.25	0.70	12.6	7	10	8	13
1902	39.1	+5.8	79	—12	1.45	—0.32	4.33	0.13	1.3	7	9	11	11
1903	38.8	+5.5	82	6	1.38	—0.39	3.90	0.15	3.9	7	11	7	13
1904	34.8	+1.5	78	8	2.18	+0.41	4.57	0.50	4.4	7	8	8	15
1905	41.5	+8.2	84	1	2.04	+0.27	3.70	0.39	4.1	7	8	8	15
1906	27.1	—6.2	65	—14	2.34	+0.57	4.55	0.58	8.9	10	8	7	16
1907	40.6	+7.3	92	— 7	1.35	—0.42	5.05	0.23	4.1	6	14	7	10
1908	37.9	+4.6	85	— 8	1.58	—0.19	3.74	0.45	1.1	6	13	7	11
1909	32.5	—0.8	71	—15	1.53	—0.24	5.00	0.28	9.8	6	12	10	9
1910	48.9	+15.6	92	—10	0.17	—1.60	1.32	0.00	T	1	23	6	2
1911	39.4	+6.1	83	2	0.93	—0.84	4.84	T	1.9	5	16	9	6
1912	24.9	—8.4	70	—19	2.01	+0.24	5.25	0.60	19.1	7	15	6	10
1913	31.9	—1.4	78	—23	2.48	+0.71	5.88	0.74	5.3	9	11	10	10
1914	34.7	+1.4	78	— 5	1.69	—0.08	3.84	0.28	1.8	7	12	8	11
1915	29.3	—4.0	61	— 5	0.96	—0.81	2.12	0.17	8.8	5	8	9	14
1916	35.2	+1.9	80	—18	1.57	—0.20	5.80	0.23	2.9	6	11	9	11

T indicates an amount too small to measure, or less than .005 inch precipitation, and less than .05 inch snowfall.

APRIL.

April, 1916, in Iowa was cold, cloudy and showery, and as respects the growth of vegetation, backward. At the close of the month the season was from one to two weeks late. Although the temperature did not average more than 2° below the normal, this deficiency would have been doubled had not warm weather prevailed from the 11th to 13th, inclusive, and on the 19th. The latter half of the month was almost continuously cooler than usual, which fact doubtless accounts for the prevalent impression that the deficiency of temperature was greater than it proved to be.

Showers, generally light in character, were numerous throughout the month, but the latter half was especially marked in this respect. Only on the 2d was no precipitation reported from some part of the state. The rain of the 29th-30th was the most general heavy fall of the month, and owing to its slow, steady character, was of much benefit to small grain, grass and gardens. The persistent cool weather retarded the growth of vegetation and checked the development of fruit buds, but the showery weather did not greatly delay farming operations. The close of the month found oats seeding unfinished in parts of the northern division of the state, yet on the other hand some preparation of ground for corn had been completed. In southern counties corn planting was in progress.

At this time fruit trees were beginning to bloom and trees were leafing out as far north as central Iowa.

On the evening of the 19th the north-central part of the state was visited by a severe wind, rain and electrical storm. In Wright County the disturbance assumed tornadic character, houses being moved from their foundations and otherwise damaged, while a number of outbuildings were destroyed. Hail accompanied the storm, some of the stones measuring an inch in diameter, and the ground was covered to a depth of eight-tenths of an inch. Fruit trees were severely injured by the hail. No persons are known to have been killed as a result of this storm.

Pressure.—The mean pressure (reduced to sea level) for the state was 29.98 inches. The highest recorded was 30.44 inches, at Sioux City, on the 6th, and the lowest was 29.33, at Des Moines and Sioux City, on the 19th. The monthly range was 1.11 inches.

Temperature.—The mean temperature for the state, as shown by the records of 105 stations, was 47.1°, or 1.6° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 45.1°, or 1.6° lower than the normal; Central, 47.5°, or 1.4° lower than the normal; Southern, 48.8°, or 1.8° lower than the normal. The highest monthly mean was 50.8°, at Keokuk, and the lowest was 42.4°, at Estherville. The highest temperature reported was 90°, at Clarinda and Northboro, on the 12th, and the lowest was 11°, at Matlock, on the 6th. The latter is a recently opened station in Sioux County, in the extreme northwestern part of the state. The temperature range for the state was 79°.

Humidity.—The average relative humidity for the state at 7 a. m. was 78 per cent, and at 7 p. m. it was 58 per cent. The mean for the month was 68 per cent, or practically the normal. The highest monthly mean was 75 per cent, at Charles City, and the lowest was 64 per cent, at Dubuque.

Precipitation.—The average precipitation for the state as shown by the records of 113 stations, was 2.62 inches, or 0.24 of an inch less than the normal. By divisions the averages were as follows: Northern, 2.94 inches, or 0.26 of an inch more than the normal; Central, 2.38 inches, or 0.48 of an inch less than the normal; Southern, 2.54 inches, or 0.51 of an inch less than the normal. The greatest amount, 5.92 inches, occurred at Nora Springs, and the least was 1.13 inches, at Sioux City. The greatest amount in any 24 consecutive hours, 2.00 inches, occurred at Belmond, on the 19th.

Snowfall.—The average snowfall for the state was 1.1 inches, or 0.7 of an inch less than the normal. The greatest amount, 6.0 inches, occurred at Rockwell City, while 7 stations reported none whatever.

Wind.—The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was 48 miles an hour from the northwest, at Sioux City, on the 16th.

Sunshine and Cloudiness.—The average percent of the possible amount of sunshine was 55, or about 4 per cent lower than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 43; Davenport, 61; Des Moines, 55; Dubuque, 56; Keokuk, 56; Sioux City, 54; Omaha, Nebr., 48.

Miscellaneous Phenomena.—Dates of: Auroras, 5th, 25th, 27th, 28th; Hail, 4th, 16th, 18th, 19th, 20th, 25th, 26th; Sleet, 3d, 21st, 26th; Thunderstorms, 13th, 14th, 15th, 16th, 18th, 19th, 20th, 25th, 28th, 29th.

Flood at Dubuque, Iowa—By James H. Spencer, Meteorologist, U. S. Weather Bureau. Melting snows in northern Minnesota caused an exceptional rise in the Upper Mississippi during the first half of the month—at Dubuque from 10.4 feet on the 1st to 18.1 feet on the 14th; this was highest water in this section since 1888, exceeding the stage of 1897 by 0.2 of a foot Losses were small as compared to the flood later in the month, but probably aggregated $75,000 to $100,000, and were divided about equally as follows: Damage to railroad property (among other damage two engines toppled into the water as the result of a weakened track); losses to mills and factories that were obliged to close down; damage to highways. Some hay in stack, farm machinery, and other property were swept away.

This flood crest had hardly passed down the Mississippi when a slow-moving Southwest Low advanced to the Upper Lake Region giving a period of heavy rains in Wisconsin, and causing floods in most of the rivers of northern Wisconsin; rains were heaviest on the 20th-21st. With the Mississippi River already very high at the time these rains occurred, the flood that resulted when crests from Wisconsin rivers reached the Mississippi were the worst since 1888, with the maximum stage at Dubuque 19.8 feet, or 1.7 feet higher than was recorded earlier in the month. A few factories and mills were compelled to close down, many factories and business houses sustained more or less loss although they did not have to close, railroads were heavy losers, many families were driven from their homes, and thousands of acres of farm lands were under water. Losses cannot be estimated at the present time, but it hardly seems probable that lowlands can be planted this year; if not, losses will aggregate several hundred thousand dollars.

High Water at Davenport, Iowa.—By J. M. Sherier, Meteorologist, U. S. Weather Bureau. High stages in the Mississippi prevailed throughout the month in the Davenport river district. At Clinton, Iowa, the highest stage was 16.4, on the 17th; at Le Claire, Iowa, 11.0 feet, on the 17th; at Davenport, 14.5 feet, on the 17th, and at Muscatine, Iowa, 16.3 feet, on the 18th and 19th. About the middle of April a break occurred in a private levee near Princeton, Iowa, and 1,000 acres of fertile agricultural land was flooded. It is thought that it will be impracticable to plant any crops in those fields during the present season.

COMPARATIVE DATA FOR THE STATE—APRIL.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	51.8	+3.1	88	2	1.80	—1.06	4.46	0.38	------	6	14	9	7
1891	50.6	+1.9	93	13	2.15	—0.71	5.06	0.59	------	8	14	7	9
1892	45.4	—3.3	88	14	4.75	+1.89	8.38	2.43	5.7	9	8	9	13
1893	45.5	—3.2	96	15	4.21	+1.35	8.51	1.24	6.0	10	8	9	13
1894	51.7	+3.0	93	12	3.07	+0.21	6.91	0.55	0.2	9	11	11	8
1895	54.2	+5.5	98	8	2.62	—0.24	5.88	0.28	2.1	5	14	8	8
1896	54.5	+5.8	94	10	5.02	+2.16	9.67	2.35	4.5	11	11	10	9
1897	47.9	—0.8	89	19	5.35	+2.49	9.86	2.22	T	11	9	9	12
1898	48.1	—0.6	91	14	2.56	—0.30	4.82	0.27	T	8	13	9	8
1899	48.9	+0.2	89	1	2.40	—0.46	5.76	0.56	2.0	7	12	11	7
1900	52.2	+3.5	89	19	2.67	—0.21	6.62	0.43	0.9	6	12	9	9
1901	49.9	+1.2	92	15	1.79	—1.07	3.47	0.66	2.0	5	14	8	8
1902	48.2	—0.5	96	9	1.71	—1.15	4.15	0.40	T	5	14	11	5
1903	49.8	+1.1	86	17	2.98	+0.12	6.00	0.74	0.8	9	11	9	10
1904	44.1	—4.6	86	13	3.63	+0.77	8.97	1.52	1.4	7	15	6	9
1905	47.5	—1.2	90	10	3.03	+0.17	5.49	0.63	1.2	8	12	8	10
1906	52.5	+3.8	94	22	2.42	—0.44	5.55	0.53	0.6	8	14	9	7
1907	41.5	—7.2	80	10	1.32	—1.54	3.22	0.24	2.7	6	12	8	10
1908	50.5	+1.8	91	8	2.24	—0.62	4.59	0.67	0.3	8	14	8	8
1909	43.8	—4.9	86	14	4.58	+1.72	9.43	0.83	3.1	12	9	9	12
1910	52.5	+3.8	99	15	1.48	—1.38	4.86	0.10	3.0	7	14	7	9
1911	46.7	—2.0	86	3	3.09	+0.23	6.04	1.33	3.6	9	11	8	11
1912	49.9	+1.2	84	20	2.66	—0.20	5.66	0.78	1.1	8	13	8	9
1913	50.2	+1.5	88	16	3.28	+0.42	7.43	1.12	2.7	9	15	5	10
1914	48.6	—0.1	88	11	2.52	—0.34	5.03	0.37	0.3	8	10	8	12
1915	57.2	+8.5	95	18	1.41	—1.45	4.02	0.05	T	7	15	10	5
1916	47.1	—1.6	90	11	2.62	—0.24	5.92	1.13	1.1	10	10	9	11

T indicates an amount too small to measure, or less than .005 inch rainfall, and less than .05 inch snowfall.

MAY.

Over most of the state the month was a rather typical May. The temperature averaged within half a degree of the normal, the precipitation exceeded but slightly the average of past Mays, while both the amount of sunshine and the wind movement corresponded closely to the usual values. The most striking feature of the month was the abnormally heavy precipitation in the extreme southern part of the state. Over a considerable area the amounts were in excess of 7 inches, and in parts of Des Moines, Lee and Van Buren counties more than 9 inches occurred.

No uncommon features were associated with the temperature conditions of the month. In almost all parts of the state the weather was slightly cooler than usual, but the average daily deficiency of temperature amounted to only a fraction of a degree. Moreover, the monthly extremes of temperature, both high and low, were well within the limits established in past years. Most of the monthly minimum temperatures at the individual stations occurred either on the 2d or 18th, the readings ranging from 27° to 38°. The warmest weather was experienced as a rule on the 6th, 7th and 25th, when the maximum temperatures ranged from 83° to 94°. Frost of somewhat damaging character formed on the

18th, injury having been greatest to tender vegetation and strawberries; but in some districts tree fruits were reported to have been hurt.

The heavy showers in the southern counties greatly interfered with the planting and cultivation of corn. At the close of the month a considerable acreage remained unplanted, and much of the corn that was up could not be cultivated. Fields, especially those on low ground, were becoming weedy. On the other hand, the ample rainfall was favorable for meadows and pastures.

The month was marked by a number of severe storms. That of the 7th was characterized by wind and dust. At Dubuque a huge smoke stack was blown down. On the afternoon of the 21st what probably were small tornadoes swept over parts of Polk, Jasper and Marion counties. A number of buildings were wrecked, but no persons were killed. The damage was greatest at Pleasantville. On the night of the 26th-27th a violent thunderstorm passed over Clinton, Iowa. Several houses were struck by lightning, and the wind did much damage to trees. Large hail, some of it as large as goose-eggs, was an accompaniment of this storm, and gardens suffered.

Pressure.—The mean pressure (reduced to sea level) for the state was 29.85 inches. The highest recorded was 30.30 inches, at Charles City and Dubuque, on the 12th, and the lowest was 29.22, at Sioux City on the 10th. The monthly range was 1.08 inches.

Temperature.—The mean temperature for the state, as shown by the records of 105 stations, was 59.9°, or 0.6° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 58.3°, or 0.7° lower than the normal; Central, 60.2°, or 0.5° lower than the normal; Southern, 61.2°, or 0.5° lower than the normal. The highest monthly mean was 62.8°, at Ottumwa, and the lowest was 55.6°, at Estherville. The highest temperature reported was 94°, at Clarinda, on the 6th, and at Logan, on the 25th, and the lowest was 27°, at Estherville, on the 2d. The temperature range for the state was 67°.

Humidity.—The average relative humidity for the state at 7 a. m. was 76 per cent, and at 7 p. m. it was 56 per cent. The mean for the month, 66 per cent, is practically the normal. The highest monthly mean was 70 per cent, at Charles City and Keokuk, and the lowest was 65 per cent, at Des Moines, Dubuque, and Sioux City.

Precipitation.—The average precipitation for the state, as shown by the records of 111 stations was 4.93 inches, or 0.36 of an inch more than the normal. By divisions the averages were as follows: Northern, 4.64 inches, or 0.16 of an inch more than the normal; Central, 4.19 inches, or 0.40 of an inch less than the normal; Southern, 5.97 inches, or 1.33 inches more than the normal. The greatest amount, 10.44 inches, occurred at Burlington, and the least, 2.14 inches, at Denison. The greatest amount in 24 consecutive hours, 3.09 inches, occurred at Corning, on the 13th.

Snowfall.—The only measurable amount of snowfall was 0.1 of an inch, at Inwood, on the 15th, but a trace occurred at eight stations in extreme northern Iowa, on the 1st, 15th or 16th.

Wind.—The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was 49 miles an hour from the northwest, at Sioux City, on the 10th.

Sunshine and Cloudiness.—The average per cent of the possible amount of sunshine was 62, or about 2 per cent more than normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 56; Davenport, 66; Des Moines, 67; Dubuque, 55; Keokuk, 63; Sioux City, 65; Omaha, Nebr., 62.

Miscellaneous Phenomena.—Dates of: Hail, 3d, 6th, 7th, 14th, 15th, 16th, 17th, 20th, 21st, 22d, 24th, 25th, 26th, 27th; Sleet, 15th, 16th; Thunder, all except the 4th and 30th.

Rivers.—At Clinton, Iowa, the Mississippi reached a stage of 18.0 feet, on May 5th; at Le Claire, Iowa, 12.1 feet, on May 5th; at Davenport, 15.5 feet, on May 5th and 6th, and at Muscatine, Iowa, 17.7 feet, on May 7th and 8th, which were the highest stages since the year 1892. On May 4th, a break in the levee protecting Muscatine Island, occurred about 7 miles below the city of Muscatine. Two other breaks occurred in the same levee before the crest of the flood was reached, and 37,000 acres of valuable land were flooded in Iowa, below Muscatine, causing an estimated loss to prospective crops on that area of about $10.00 an acre.

In the Dubuque river district the losses during the April-May floods were estimated at $225,000.

COMPARATIVE DATA FOR THE STATE—MAY.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	57.7	— 2.8	90	26	3.56	—1.01	6.44	1.61	------	9	10	13	8
1891	58.3	— 2.2	94	21	3.18	—1.39	7.10	1.46	------	8	14	9	8
1892	54.0	— 6.5	88	29	8.77	+4.20	12.64	4.87	T.	16	5	9	17
1893	56.6	— 3.9	96	26	3.45	—1.12	5.82	1.65	0	9	13	9	9
1894	61.1	+ 0.6	96	22	1.87	—2.70	4.77	0.33	0	6	17	10	4
1895	61.7	+ 1.2	104	24	3.19	—1.38	5.79	0.84	0	9	11	12	8
1896	65.5	+ 5.0	100	34	6.69	+2.12	11.79	3.40	0	12	11	12	8
1897	58.5	— 2.0	96	20	1.92	—2.65	3.59	0.21	0	5	16	10	5
1898	59.6	— 0.9	92	26	4.67	+0.10	7.82	2.22	0	12	9	10	12
1899	60.2	— 0.3	90	27	6.23	+1.66	11.47	3.09	0	13	9	12	10
1900	63.2	+ 2.7	98	22	3.31	—1.26	6.98	0.96	0	8	14	10	7
1901	60.7	+ 0.2	95	28	2.35	—2.22	4.57	0.72	0	7	16	9	6
1902	63.8	+ 3.3	97	25	5.39	+0.82	18.04	0.87	0	13	10	12	9
1903	61.6	+ 1.1	91	24	8.55	+3.98	15.45	2.88	0	16	9	12	10
1904	50.6	— 0.9	93	27	3.78	—0.79	8.15	1.50	0	8	13	10	8
1905	58.3	— 2.2	88	28	5.95	+1.38	10.83	2.57	0	14	12	11	8
1906	60.8	+ 0.3	95	24	3.54	—1.03	10.72	0.89	0	11	13	10	8
1907	53.5	— 7.0	96	14	3.48	—1.09	7.68	0.71	1.0	10	11	10	10
1908	59.4	— 1.1	93	13	8.34	+3.77	14.33	1.33	0	15	9	11	11
1909	57.9	— 2.6	97	18	4.34	—0.23	7.85	1.86	0.1	9	12	12	7
1910	55.4	— 5.1	89	18	3.41	—1.16	6.91	1.29	T.	10	15	7	9
1911	64.9	+ 4.4	98	23	3.76	—0.81	8.73	0.42	0.7	9	16	9	6
1912	62.7	+ 2.2	97	29	3.33	—1.24	6.41	0.72	0	10	14	11	6
1913	59.4	— 1.1	102	30	6.24	+1.67	10.25	3.14	0	13	11	8	12
1914	62.2	+ 1.7	98	25	3.31	—1.26	6.90	0.30	T.	10	14	11	6
1915	56.1	— 4.4	99	25	7.34	+2.77	13.21	3.82	T.	14	9	9	13
1916	59.9	— 0.6	94	27	4.93	+0.36	10.44	2.14	T.	12	13	10	8

T indicates an amount too small to measure, or less than .005 inch of precipitation, and less than .05 inch of snowfall.

JUNE.

Persistent coolness and a rain and electrical storm of great severity in the northeasten counties on the night of the 1st, constituted the leading climatological features of June, 1916, in Iowa. There were but few days during the month that were not cooler than usual, and the mean temperature was lower than in any other June since state-wide observations were begun in 1890. No marked warmth occurred until the last two days of the month when in some sections were experienced the highest temperatures since the summer of 1914. The storm already referred to was one of the most destructive of record in northeastern Iowa. Sixteen persons were killed when a passenger train ran into a washout, and the monetary losses totaled at least $500,000. of moisture were felt in any section. However, by the close of the month This storm will be described in greater detail in the July report.

While the month was moderately dry over most of the state, the rains came at such timely intervals that no serious effects of the deficiency rain was needed in many localities.

The weather of the month was favorable for most crops except corn; growth of the latter was retarded by the cool weather, but the crop made a remarkable response to the warm, humid conditions of the closing days.

Pressure.—The pressure (reduced to sea level) for the state was 29.87 inches. The highest recorded was 30.25 inches, at Dubuque, on the 22d, and the lowest was 29.39, at the same station, on the 8th. The monthly range was 0.86 of an inch.

Temperature.—The mean temperature for the state, as shown by the records of 110 stations, was 64.5°, or 4.6° lower than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 63.2°, or 4.4° lower than normal; Central, 64.7°, or 4.6° lower than normal; Southern, 65.7°, or 4.6° lower than the normal. The highest monthly mean was 68.0°, at Thurman, in the extreme southwestern part of the state, and the lowest was 61.0°, at Postville, in the extreme northeast. The highest temperature reported was 96°, at Burlington, Cedar Rapids, Mount Pleasant and Whitten, on the 30th, and the lowest was 38°, at Washta, on the 18th and 20th, and at Matlock, on the 19th. The temperature range for the state was 58°.

Humidity.—The average relative humidity for the state at 7 a. m. was 81 per cent, and 7 p. m. it was 62 per cent. The mean for the month was 71 per cent, or 2 per cent higher than the normal. The highest monthly mean was 75 per cent, at Charles City and Keokuk, and the lowest was 67 per cent, at Des Moines.

Precipitation.—The average precipitation for the state, as shown by the records of 115 stations, was 3.71 inches, or 0.67 of an inch less than the normal. By divisions the averages were as follows: Northern, 4.21 inches, or 0.22 of an inch less than the normal; Central, 3.06 inches, or 1.26 inches less than the normal; Southern, 3.85 inches, or 0.54 of an inch less than the normal. The greatest amount, 7.96 inches, occurred at Postville, and the least, 1.41 inches, at Gilman. The greatest amount in 24 consecutive hours, 4.32 inches, occurred at Postville, on the 1st-2d.

Wind.—The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was 60 miles an hour, from the northwest, at Sioux City, on the 22d.

Sunshine and Cloudiness.—The average per cent of the possible amount of sunshine was 68, or about 1 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 53; Davenport, 70; Des Moines, 74; Dubuque, 70; Keokuk, 70; Sioux City, 65; Omaha, 60.

Miscellaneous Phenomena.—Dates of: Hail, 1st, 7th, 13th, 14th, 15th, 16th, 17th, 22d, 29th; Thunderstorms, all except the 5th and 30th. A lunar rainbow was observed at Des Moines on the 15th.

Rivers.—The Mississippi River at Dubuque was moderately high during the first half of the month, with a maximum stage of 15.6 feet on the 5th. A rise of 3.2 feet from the 1st to the 5th resulted from the great storm of the 1st. After the 5th there was a steady fall through the month, with a stage of 9.8 feet on the 30th. At Davenport the river rose steadily during the first decade, reaching a stage of 13.0 feet on the 10th, 11th and 12th, after which time it fell steadily until the end of the month. On the 30th the stage at Davenport was 8.6 feet. At Sioux City the Missouri River rose to near flood stage by the close of the month.

COMPARATIVE DATA FOR THE STATE—JUNE.

YEAR	Temperature				Precipitation					Number of Days		
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	72.7	+3.6	106	44	7.76	+3.38	16.53	1.57	11	12	10	8
1891	69.1	0.0	99	37	5.39	+1.01	19.88	1.68	11	8	10	12
1892	69.2	+0.1	102	42	5.19	+0.81	14.16	0.67	10	12	11	7
1893	71.2	+2.1	100	40	3.91	—0.47	7.56	1.36	8	15	11	4
1894	73.2	+4.1	104	34	2.67	—1.71	6.20	0.57	7	16	10	4
1895	69.7	+0.6	102	34	4.32	—0.06	9.26	0.98	10	11	11	8
1896	69.1	0.0	100	40	3.11	—1.27	7.89	0.81	9	12	13	5
1897	69.1	0.0	103	29	3.81	—0.57	9.38	1.03	10	10	12	8
1898	71.4	+2.3	99	42	4.72	+0.34	12.48	1.90	9	13	10	7
1899	70.7	+1.6	100	42	5.04	+0.66	11.99	1.10	10	12	13	5
1900	69.7	+0.6	102	33	3.98	—0.40	12.35	0.67	5	17	10	3
1901	72.3	+3.2	106	30	3.71	—0.67	7.84	1.05	9	15	11	4
1902	65.2	—3.9	97	32	7.16	+2.78	16.04	1.46	14	8	11	11
1903	64.6	—4.5	96	30	2.86	—1.52	6.04	0.75	10	13	10	7
1904	67.1	—2.0	94	35	3.45	—0.93	8.35	0.44	7	13	10	7
1905	69.9	+0.8	100	36	5.53	+1.15	14.89	1.80	10	12	11	7
1906	67.9	—1.2	99	37	3.92	—0.46	8.27	1.48	8	15	10	5
1907	66.5	—2.6	98	36	5.35	+0.97	9.33	2.07	11	14	9	7
1908	67.1	—2.0	94	35	5.66	+1.28	11.88	1.77	13	12	10	8
1909	69.1	0.0	96	40	6.41	+2.03	13.30	2.80	13	12	10	8
1910	69.5	+0.4	105	33	1.99	—2.39	5.51	0.05	7	18	7	5
1911	75.7	+6.6	108	36	1.82	—2.56	6.28	0.06	5	20	8	2
1912	66.2	—2.9	101	34	2.74	—1.64	5.71	0.78	7	15	9	6
1913	71.5	+2.4	102	33	3.31	—1.07	8.95	0.74	7	19	8	3
1914	72.2	+3.1	101	40	5.57	+1.19	13.24	1.17	13	12	14	4
1915	65.1	—4.0	91	31	4.16	—0.22	9.99	1.72	11	12	12	6
1916	64.5	—4.6	96	38	3.71	—0.67	7.96	1.41	10	13	11	6

JULY.

July, 1916, in Iowa will be long notable in the climatological annals of the state as a period of extreme heat and dryness. With the single exception of the memorable July of 1901 it was the warmest month of record in Iowa, and of all Julys, that of 1894 alone was drier. The month will be noteworthy more for its general warmth as a whole than for any excessively high temperatures that occurred. Although thermometer readings exceeding 100° were common on a number of days, yet the absolute highest temperature reported was but 105°; this is several degrees lower than the figures attained in a number of other years. Since the mean temperature from day to day was almost continuously above the normal it can not be said that the month had any cool periods. As a rule monthly minimum temperatures at the individual stations were as high or higher than any similar record in the past. The hottest part of the month comprised the 7-day period ending on the 30th, which was, with two exceptions, the warmest week of record in Iowa.

The average precipitation for the whole state was considerably less than one-half the normal, and only six stations reported an excess. While the showers came at rather timely intervals, especially during the first two decades of the month, the geographical distribution was decidedly irregular, as may be seen by reference to the precipitation chart at the end of this report. An extreme illustration of this irregularity is afforded by the records of two rain gauges in Des Moines. The gauge at the regular Weather Bureau station caught 1.50 inches, while another not two miles distant showed a fall of 3.03 inches. In some localities moisture was needed early in the month, but actual droughty conditions did not set in until the last decade. At that time all vegetation was in urgent want of rain, and potatoes, garden truck and pastures were suffering severely, while corn was imperiled. Fortunately, showers occurred on the 31st in a number of localities and were highly beneficial, but in other districts either no rain fell or the amounts were inadequate.

Naturally, the extreme heat was trying to both man and beast. Many persons were prostrated—some fatally, and a large number of animals died. In some cases manufacturing establishments either suspended or curtailed operations at the time of the most intense heat. That the drawbacks of the month had in some degree their compensations is indicated from the fact that the weather was exceptionally favorable for harvesting and threshing owing to the large number of clear, sunshiny days. The amount of sunshine was among the greatest ever recorded in Iowa in any month.

Pressure.—The mean pressure (reduced to sea level) for the state was 29.97 inches. The highest recorded was 30.27 inches, at Sioux City, on the 31st, and the lowest was 29.72, at Davenport, on the 2d, and at Sioux City, on the 3d. The monthly range was 0.55 of an inch.

Temperature.—The mean temperature for the state, as shown by the records of 105 stations, was 79.7°, or 5.6° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 78.6°, or 5.9° higher than the normal; Central, 79.9°, or 5.6° higher than the normal; Southern, 80.5°, or 6.4° higher than the normal. The highest monthly mean was 83.5°, at Keokuk, and the lowest was 75.2°, at Postville. The highest temperature reported was 105°, at Ottumwa, on the 26th, and at Olin, on the 28th; the lowest was 48°, at Estherville, on the 20th. The temperature range for the state was 57°.

Humidity.—The average relative humidity for the state at 7 a. m. was 74 per cent, and at 7 p. m. it was 53 per cent. The mean for the month was 64 per cent, or 4 per cent lower than the normal. The highest monthly mean was 70 per cent, at Charles City, and the lowest was 60 per cent, at Dubuque.

Precipitation.—The average precipitation for the state, as shown by the records of 115 stations, was 1.78 inches, or 2.18 inches less than the normal. By divisions the averages were as follows: Northern, 2.07 inches, or 1.81 inches less than the normal; Central, 1.69 inches, or 2.29 inches less than the normal; Southern, 1.59 inches, or 2.43 inches less than the normal. The greatest amount, 6.87 inches, occurred at Cedar Rapids, and the least, 0.10 of an inch, at Keokuk. The greatest amount in 24 consecutive hours, 4.46 inches, occurred at Cedar Rapids, on the 19th.

Wind.—The prevailing direction of the wind was from the south. The highest velocity reported from a regular Weather Bureau station was 37 miles an hour, from the south, at Sioux City, on the 18th.

Sunshine and Cloudiness.—The average percent of the possible amount of sunshine was 85, or 13 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 71; Davenport, 85; Des Moines, 91; Dubuque, 87; Keokuk, 80; Sioux City, 84.

Miscellaneous Phenomena.—Dates of: Hail: 2d, 12th, 17th, 22d, 23d, 24th; Thunderstorms, 2d, 3d, 4th, 8th, 9th, 11th to 25th, inc., 29th, 30th, 31st.

Rivers.—The Mississippi at Dubuque was almost stationary at slightly more than 9 feet during the first 10 days; then it rose to a maximum of 10.9 feet on the 20th, after which it fell steadily, reaching a minimum of 8.0 feet at the end of the month. The average stage at that point was 9.8 feet, which is high for July. In the Davenport district the river averaged almost 2 feet lower at the end of the month than at the beginning, but good boating stages still prevailed.

Storm of June 1, 1916, in Northeastern Iowa.—By J. H. Spencer, Meteorologist, U. S. Weather Bureau. The storm in northeastern Iowa on June 1, 1916, was one of the most destructive on record in this part of the state, owing to the resulting local floods. Exceptionally heavy rainfall was recorded and it was the result of severe thunderstorms. These storms occurred between 5:00 p. m. and midnight, and most of the rain fell in less than three hours. At Decorah the amount of rainfall was 3.21 inches and the time of heaviest fall, between 5:30 p. m. and 7:00 p. m. The result of such heavy rainfall in such a short period of time was that in the more hilly sections floods of an exceptionally destructive character occurred. A great volume of water rushed down the steep hillsides into creeks or small rivers, sweeping away bridges, buildings, live stock, etc.

The greatest losses were at Decorah, Fort Atchison, and McGregor, but there was hardly a railroad line in northeastern Iowa that did not experience damage of some sort. More than 25 large railroad bridges and a large number of county bridges and culverts were damaged or destroyed. The water rushed through the principal street of McGregor, flooding stores, and doing great damage.

At Packard a passenger train ran into a washout, and 16 persons were killed and many injured.

Damage was so severe to railroad property that normal traffic on some of the branch lines of northeastern Iowa was not resumed for six weeks or more. It will, in fact, require many months to complete permanent repairs. Losses are estimated to be at least $500,000, divided as follows: $250,000 to railroads, roadbed and track, rolling stock and contents, etc.; $150,000 to the various counties visited by the storm, bridges and culverts, chiefly; $100,000 to private individuals—stocks of merchandise, live stock, suspension of business, wages of employes, etc.

COMPARATIVE DATA FOR THE STATE—JULY.

YEAR	Temperature				Precipitation					Number of Days		
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	75.6	+1.5	110	45	1.98	—1.98	5.00	0.37	3	18	8	5
1891	68.5	—5.6	99	41	4.22	+0.26	8.20	1.67	8	13	13	5
1892	73.0	—1.1	104	38	5.29	+1.33	12.86	1.71	9	16	10	5
1893	75.0	+0.9	102	47	3.33	—0.63	8.84	1.49	7	19	10	2
1894	76.4	+2.3	109	39	0.63	—3.33	3.50	T	3	22	8	1
1895	72.1	—2.0	104	35	3.40	—0.56	10.10	0.45	7	15	12	4
1896	73.6	—0.5	104	42	6.90	+2.94	12.67	1.61	9	14	11	6
1897	75.6	+1.5	106	42	3.26	—0.70	7.60	1.01	6	18	10	8
1898	73.4	—0.7	102	42	2.98	—0.98	12.88	0.55	7	19	9	8
1899	73.1	—1.0	101	38	3.07	—0.89	8.66	0.42	7	16	10	5
1900	73.4	—0.7	102	37	6.15	+2.19	18.45	1.80	9	16	10	5
1901	82.4	+8.3	113	46	2.34	—1.62	5.97	0.27	5	21	9	1
1902	73.1	—1.0	99	41	8.67	+4.71	13.57	4.82	13	14	10	7
1903	72.9	—1.2	100	40	4.83	+0.87	12.72	0.94	9	17	9	5
1904	70.6	—3.5	100	38	4.41	+0.45	11.97	1.28	10	16	9	6
1905	70.6	—3.5	102	40	2.91	—1.05	7.08	0.69	9	14	10	7
1906	70.9	—3.2	102	42	3.04	—0.92	7.05	0.26	8	18	10	3
1907	73.7	—0.4	102	41	7.27	+3.31	13.66	3.97	13	16	11	4
1908	73.0	—1.1	100	42	3.66	—0.30	9.21	0.70	8	16	10	5
1909	72.3	—1.8	102	46	4.77	+0.81	12.20	1.20	10	15	8	6
1910	74.5	+0.4	108	43	1.86	—2.10	5.69	0.12	7	19	8	4
1911	75.5	+1.4	111	38	2.27	—1.69	6.62	0.08	7	18	10	3
1912	74.6	+0.5	103	38	3.71	—0.25	7.56	1.17	10	17	10	4
1913	76.1	+2.0	108	45	1.82	—2.14	6.23	T	5	21	8	2
1914	76.6	+2.5	109	43	2.27	—1.69	6.50	0.44	5	20	8	3
1915	69.5	—4.6	92	40	8.32	+4.36	15.83	3.68	14	10	12	9
1916	79.7	+5.6	105	48	1.78	—2.18	6.87	0.10	5	23	7	1

AUGUST.

The month was marked by a continuance, but in a modified degree, of the hot, dry weather that featured July. The temperature averaged above the normal until the 22d, except during the 5-day period beginning on the 11th. Most of the last decade was cooler than usual, with light frosts reported from a few northern stations on the 27th and 28th.

The state received about 70 per cent of the normal August precipitation, and much the greater part of this came during the first half of the month. The rains broke the severe drought in most districts and were of inestimable value to all growing crops, but especially to corn. In some sections, however, that crop had already been seriously damaged by the dry weather. After the 15th but little rain fell in any part of the state until the last day of the month, with the result that the ground became too dry for plowing.

A severe wind and electrical storm occurred at Sioux City on the 6th. The total loss in the city was estimated at $100,000. For one minute the wind blew at the rate of 120 miles an hour, which is the highest velocity on record at that station for a similar length of time.

An auroral display of marked brilliancy occurred on the night of the 26th-27th; a brief description of the phenomenon appears under the heading "Miscellaneous Phenomena."

Pressure.—The mean pressure (reduced to sea level) for the state was 29.98 inches. The highest recorded was 30.34 inches, at Charles City, on the 13th, and the lowest was 29.54, at Sioux City, on the 10th. The monthly range was 0.80 of an inch.

Temperature.—The mean temperature for the state, as shown by the records of 106 stations, was 74.0°, or 2.2° higher than the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 72.3°, or 1.9° higher than the normal; Central, 74.0°, or 2.3° higher than the normal; Southern, 75.6°, or 2.4° higher than the normal. The highest monthly mean (only complete records considered) was 77.5°, at Keokuk, and the lowest was 69.7°, at Sibley. The highest temperature reported was 106°, at Webster City, on the 4th, and the lowest was 35°, at Matlock, on the 27th. The temperature range for the state was 71°.

Precipitation.—The average precipitation for the state, as shown by the records of 116 stations, was 2.58 inches, or 1.10 inches less than the normal. By divisions the averages were as follows: Northern, 2.01 inches or 1.47 inches less than the normal; Central, 2.77 inches, or 1.00 inch less than the normal; Southern, 2.96 inches, or 0.82 of an inch less than the normal. The greatest amount, 6.23 inches, occurred at Thurman, and the least, 0.49 of an inch, at Delaware. The greatest amount in 24 consecutive hours, 3.21 inches, occurred at Bloomfield, on the 10th-11th.

Humidity—The average relative humidity for the state at 7 a. m. was 79 per cent, and at 7 p. m. it was 58 per cent. The mean for the month was 69 per cent, or 2 per cent lower than the normal. The highest monthly mean was 73 per cent, at Charles City and Keokuk, and the lowest was 65 per cent, at Davenport and Des Moines.

Wind.—The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was 70 miles an hour, from the southwest, at Sioux City, on the 6th.

Sunshine and Cloudiness.—The average per cent of the possible amount of sunshine was 72, or 1 per cent more than the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 71; Davenport, 73; Des Moines, 78; Dubuque, 76; Keokuk, 73; Sioux City, 69.

Rivers.—The Misssissippi River fell steadily throughout the month. At Dubuque the fall was from a stage of 7.8 feet on the 1st to 4.3 feet on the 30th. At Davenport the river fell from 6.0 feet on the 1st to 3.2 feet on the 31st. The smaller streams in the vicinity of the last named station dried up.

Miscellaneous Phenomena.—A brilliant display of the aurora borealis occurred on the night of the 26th-27th. The phenomenon was visible in all parts of the state. The illumination was first observed about dusk and it continued past 12 o'clock midnight of the 26th. The most marked features of the display were the flashing of the streamers and the appearance of a whitish band of light. At times the streamers extended upward past the zenith and many degrees to the southward. In country districts away from the lights of cities and towns, the auroral light was reported to have covered a large part of the sky. The display was most pronounced between 8:30 p. m. and 9 p. m. The band of whitish light had a width of from 2 to 3 degrees and when first seen, about 9 p. m., extended almost across the sky from horizon to horizon, one end being a few degrees south of east and the other at the opposite side of the sky. The crown or top of the band passed almost through the zenith. The whole band was drifting southward and slowly fading. By 9:15 p. m. it had vanished, the crown having moved southward about 20°.

Dates of: Hail: 6th, 26th; Thunderstorms: All but the 16th, 18th, 23rd, 27th, 29th; Fog: 8th, 9th, 14th, 15th, 16th, 24th; Solar halos: 20th, 29th, 30th; Lunar halos: 18th.

COMPARATIVE DATA FOR THE STATE—AUGUST.

YEAR	Temperature				Precipitation					Number of Days		
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890	68.4	—3.4	102	36	3.41	—0.27	6.44	1.02	8	15	10	6
1891	69.1	—2.7	106	34	4.24	—0.56	13.02	1.23	8	13	12	6
1892	71.4	—0.4	102	40	2.24	—1.34	4.69	0.65	5	18	9	4
1893	69.4	—2.4	101	30	2.32	—1.26	6.22	0.40	5	19	9	3
1894	74.6	+2.8	108	38	1.58	—2.10	4.53	T	4	21	8	2
1895	71.9	+0.1	103	37	4.43	+0.75	10.63	0.67	7	17	9	5
1896	71.7	—0.1	104	34	3.52	—0.16	12.25	0.86	8	15	11	5
1897	68.9	—2.9	104	35	1.86	—1.82	4.98	0.47	6	15	11	5
1898	71.2	—0.6	103	40	3.44	—0.24	10.55	0.58	6	17	9	5
1899	74.4	+2.6	100	41	3.68	0.00	10.45	1.12	7	17	10	4
1900	77.4	+5.6	103	44	4.65	+0.97	10.43	1.26	6	18	10	3
1901	73.8	+2.0	105	40	1.29	—2.39	4.46	T	5	20	9	2
1902	69.1	—2.7	98	37	6.58	+2.90	15.47	1.57	11	11	11	9
1903	69.1	—2.7	101	41	6.64	+2.96	17.74	2.55	11	12	10	9
1904	69.1	—2.7	97	35	3.43	—0.25	6.75	0.66	7	17	8	6
1905	74.3	+2.5	104	44	4.05	+0.37	8.47	1.04	9	16	9	6
1906	74.1	+2.3	101	33	3.95	+0.27	10.51	0.92	9	17	9	5
1907	71.1	—0.7	99	37	4.33	+0.65	9.67	1.05	9	17	9	5
1908	70.0	—1.8	101	38	4.77	+1.09	10.55	1.35	9	17	9	5
1909	76.1	+4.3	103	33	1.81	—1.87	8.21	T	5	21	8	2
1910	71.9	+0.1	104	36	3.88	+0.20	11.22	0.37	8	15	10	6
1911	71.7	—0.1	107	34	3.32	—0.36	9.47	0.44	9	16	10	5
1912	71.0	—0.8	101	40	3.78	+0.10	7.90	0.80	10	15	10	6
1913	76.6	+4.8	108	40	2.68	—1.00	7.13	0.08	6	17	10	4
1914	73.7	+1.9	103	40	2.19	—1.49	4.90	0.42	7	17	10	4
1915	65.9	—5.9	91	30	2.81	—0.87	9.14	0.27	8	16	8	7
1916	74.0	+2.2	106	35	2.58	—1.10	6.23	0.49	7	18	9	4

SEPTEMBER.

The average conditions that prevailed during the month did not vary much from the normals, yet there were periods when both the temperature and precipitation departures were excessive. This was especially true in regard to the temperature, which was above the normal until the 10th, with daily readings from 10° to 15° above the seasonalbe average between the 4th and 6th. From the 11th to the 23rd, inclusive, there was a decided deficiency of temperature, the daily departures ranging from 1° to 17°. Another warm spell prevailed from the 24th to the 27th, which was followed by the coolest weather of the month on the 29th. Light to killing frost occurred on the 15th and 18th and killing frost and freezing temperatures were almost general on the 29th. The rainfall was failry well distributed throughout the month and over the state, except over the south-central district, where the drought that prevailed in that section since early in July continued until the 26th and 27th. The showers on those dates were general and in many localities heavy, and those on the 26th were attended by wind squalls in various sections and by a typical tornado in Page, Taylor and Ringgold counties. The storm apparently developed near Blanchard, in Colfax Township, Page County, and moved northeastward to near Gravity, in Washington Township, Taylor County, being very destructive in East River Township, Page County, where several farm houses and barns were completely demolished, but no lives were lost. The damage done to farm buildings in Page County amounted to about $15,000. A storm of great violence did considerable damage in and near Diagonal during the evening of the 26th. This was probably the same storm that passed through Page and part of Taylor counties, or, at least, was caused by the same disturbance, as it was on the same line and moved in the same direction and occurred later in the evening. Very destructive hail accompanied the storm. At Clarinda 1,898 panes of glass were broken in the greenhouse of J. V. Pfander.

However, the month, as a whole, was pleasant and favorable for crops and outdoor occupations. Much plowing was done except in the south-central districts, where the drought prevailed. The bulk of the corn crop was mature at the time of the killing frosts and the only injury done was to some of the late planted corn and mostly on low ground.

Pressure.—The mean pressure (reduced to sea level) for the state was 30.0 inches. The highest recorded was 30.40 inches, at Sioux City, on the 28th, and the lowest was 29.39 inches at Des Moines, on the 26th. The monthly range was 1.01 inches.

Temperature.—The mean temperature for the state, as shown by the records of 106 stations, was 62.5°, or 1.1° below the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 60.7°, or 1.3° below the normal; Central, 62.4°, or 1.0° below the normal; Southern, 64.3°, or 0.9° below the normal. The highest monthly mean was 63.3° at Ottumwa, and the lowest was 58.6°, at Mason City. The highest temperature reported was 98°, at Clarinda, on the 4th and 5th, and Corydon, on the 5th; the lowest was 21° at Sibley and Washta on the 29th. The range for the state was 77.

Humidity.—The average relative humidity for the state at 7 a. m. was 82 per cent, and at 7 p. m. 62 per cent. The mean for the month was 72 per cent, or 2 per cent lower than the normal. The highest monthly mean was 81 per cent, at Charles City, and the lowest was 66 per cent at Des Moines.

Precipitation.—The average precipitation for the state, as shown by the records of 113 stations, was 3.89 inches, or 0.36 in more than the normal. By divisions, the averages were as follows: Northern, 4.18 inches, or 0.54 inch more than the normal; Central, 3.82 inches, or 0.37 inch more than the normal; Southern, 3.66 inches, or 0.18 inch more than the normal. The greatest amount, 9.71 inches, occurred at Clarinda, and the least, 1.45 inches, at Monroe. The greatest amount in 24 consecutive hours, 5.80 inches, occurred at Fairfield on the 6th and at Clarinda on the 27th.

Wind.—The prevailing direction of the wind was from the southwest. The highest velocity reported from a regular Weather Bureau station was 48 miles an hour from the northwest, at Charles City, on the 6th.

Sunshine and Cloudiness.—The average per cent of the possible amount of sunshine was 65 per cent. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 46; Davenport, 66; Des Moines, 71; Dubuque, 65; Keokuk, 70; Sioux City, 84; Omaha, Nebr., 69.

Miscellaneous Phenomena—Dates of: 15, 16, 17, 18, 23 and 29; general killing *frost*, 29; *thunderstorms*, 4, 5, 6, 7, 10, 11, 12, 24, 25, 26, 27; *hail*, 4, 6, 8, 25, 26, 27; *aurora borealis*, 13, 26 and 30.

Rivers—The stage of the Mississippi River, at Dubuque, was near 5 feet throughout the month, and at Davenport it ranged from 3.1 feet on the 1st, 2nd and 3rd to 4.4 feet on the 28th, 29th and 30th.

OCTOBER.

As a whole, October was a typical autumn month for this mid-continental region; the average temperature, rainfall and sunshine approximated the normals very closely, but there was sufficient variation in the daily amounts to give a stimulating effect to man and beast. The month opened warm and dry, but showers were more or less frequent during the second and third decades, especially over the central and eastern districts, and the lowest temperatures were recorded generally on the 20th or 21st. The only feature out of the ordinary being a severe snowstorm on the 19th and 20th, when snow fell in all parts of the State except the extreme eastern counties. Several stations in the northwestern district

COMPARATIVE DATA FOR THE STATE SEPTEMBER

YEAR	Temperature				Precipitation				Number of Days			
	Mean	Departure	Highest	Lowest	Total	Departure	Greatest	Least	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	59.3	—4.1	96	23	2.97	—0.39	4.85	1.36	7	13	10	7
1891	67.3	+3.9	104	28	1.33	—2.06	3.60	0.13	4	20	7	3
1892	64.7	+1.3	99	29	1.53	—1.83	4.15	0.16	4	16	8	6
1893	64.7	+1.3	102	18	2.34	—1.02	5.49	0.74	4	20	6	4
1894	65.1	+1.7	100	26	3.57	+0.21	7.43	0.67	8	15	10	5
1895	66.8	+3.4	103	22	3.03	—0.33	7.43	0.85	5	18	8	4
1896	58.5	—4.9	95	22	4.09	+0.73	9.96	1.82	10	11	9	10
1897	70.9	+7.5	106	26	2.04	—1.32	5.88	0.00	4	23	5	2
1898	65.3	+1.9	99	29	2.69	—0.67	8.45	0.41	7	16	9	5
1899	62.5	—0.9	104	15	0.93	—2.43	4.32	T	4	16	9	5
1900	64.4	+1.0	99	26	4.98	+1.62	8.82	2.48	9	15	8	7
1901	63.3	—0.1	102	26	4.77	+1.41	13.62	1.71	9	13	9	8
1902	59.1	—4.3	88	23	4.35	+0.99	10.41	1.65	9	15	6	9
1903	60.8	—2.6	94	28	3.81	+0.45	8.79	1.42	10	14	6	10
1904	64.0	+0.6	94	30	2.78	—0.58	8.33	0.09	7	13	8	9
1905	65.8	+2.4	96	36	3.81	+0.45	13.18	0.50	8	14	8	8
1906	67.2	+3.8	100	27	4.16	+0.80	11.10	0.64	8	16	8	6
1907	62.8	—0.6	98	25	2.75	—1.61	6.06	1.38	8	15	9	6
1908	67.9	+4.5	98	20	1.20	—2.16	3.46	0.25	3	21	6	[illegible]
1909	62.4	—1.0	94	30	3.58	+0.22	7.34	1.39	9	14	8	8
1910	63.2	—0.2	99	30	3.59	+0.23	7.43	1.18	9	14	7	9
1911	65.8	+2.4	103	32	5.12	+1.76	13.73	1.19	10	11	9	10
1912	62.1	—1.3	104	24	3.98	+0.62	10.12	0.28	11	12	8	10
1913	64.5	+1.1	107	19	3.31	—0.05	7.44	0.45	9	15	8	7
1914	64.5	+1.1	99	30	7.88	+4.52	16.24	2.48	10	16	7	7
1915	63.7	+0.3	91	30	6.03	+2.67	12.45	2.88	11	11	8	11
1916	62.5	—0.9	98	21	3.89	+0.53	9.71	1.45	7	17	8	[illegible]

reported more than 5.0 inches of snowfall, and in numerous localities the drifts were several feet deep. This storm, together with the frequent rains between the 20th and 28th, interfered with corn husking, which had begun earlier than usual. Husking was, however, resumed during the last few days of the month and 20 to 30 per cent of the crop had been gathered by the close of the month. Stock was in pasture, and in many localities flowers were in bloom at the end of the month.

Pressure—The mean pressure (reduced to sea level) for the state was 30.05 inches. The highest recorded was 30.63 inches, at Sioux City, on the 10th, and the lowest was 29.37 inches, at Davenport on the 20th. The monthly range was 1.26 inches.

Temperature—The mean temperature for the State, as shown by the records of 104 stations, was 50.9°, or 0.1° above the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 48.5°, or 0.5° below the normal; Central, 51.0°, or 0.1° above the normal; Southern, 53.1°, or 0.5° above the normal. The highest monthly mean was 55.3°, at Ottumwa, and the lowest, 45.9°, at Northwood. The highest temperature reported was 92°, at Toledo on the 7th; the lowest was 6°, at Sibley on the 21st. The range for the State was 86°.

Precipitation—The average precipitation for the State, as shown by the record of 109 stations, was 2.00 inches, or 0.46 inch less than the normal. By divisions the averages were as follows: Northern, 1.45 inches, or 0.89 inch less than the normal; Central, 2.37 inches, or 0.12 inch less than the normal; Southern, 2.18 inches, or 0.36 inch less than the normal. The greatest amount, 4.33 inches, occurred at Clinton, and the least, 0.20 inch, at Lake Park. The greatest amount in 24 consecutive hours, 2.08 inches, occurred at Oskaloosa on the 23d-24th.

Humidity—The average relative humidity for the State at 7 a. m. was 79 per cent, and at 7 p. m., 62 per cent. The mean for the month was 70 per cent, or 2 per cent below the normal. The highest monthly mean was 78 per cent, at Charles City, and the lowest, 66 per cent, at Des Moines.

Snow—One of the heaviest October snow storms on record occurred on the 19th-20th. The fall was general except over the extreme eastern counties north of Louisa. More than 4 inches was reported from the extreme northwestern part of the State, as well as from a limited district in Des Moines and Lee counties. The average fall for the whole State was 2.0 inches. The greatest monthly amount was 9.6 inches, at Inwood.

Wind—The prevailing direction of the wind was from the south. The highest velocity reported from a regular Weather Bureau station was 40 miles an hour from the southeast, at Sioux City, on the 1st.

Sunshine and Cloudiness—The average per cent of the possible amount of sunshine was 59, or 2 per cent below the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 51; Davenport, 69; Des Moines, 61; Dubuque, 58; Keokuk, 58; Sioux City, 55; Omaha, Neb., 64.

Miscellaneous Phenomena—Dates of: *Auroras;* 4th, 6th; ***Dense Fog,*** 11th, 13th, 16th, 30th; *Sleet,* 19th, 20th, 23rd, 24th; ***Thunderstorms,*** 2d 4th, 5th, 12th, 13th, 23d, 26th, 27th, 28th, 29th, 30th.

Rivers—Rivers remained nearly stationary during the month.

COMPARATIVE DATA FOR THE STATE—OCTOBER.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890	49.2	—1.6	86	16	3.48	+1.02	6.82	1.59	-----	7	11	11	9
1891	50.0	—0.8	92	19	2.77	+0.31	6.53	0.85	-----	6	18	7	6
1892	54.5	+3.7	96	14	1.55	—0.91	2.58	0.00	0.0	4	21	6	4
1893	52.4	+1.6	94	10	1.28	—1.18	4.56	0.02	0.0	4	16	9	6
1894	51.7	+0.9	90	20	2.67	+0.21	5.25	0.03	0.2	8	14	8	9
1895	46.0	—4.8	88	4	0.47	—1.99	1.38	0.00	T.	2	19	8	4
1896	47.9	—2.9	88	12	3.13	+0.67	5.05	1.51	T.	5	18	6	7
1897	56.8	+6.0	97	12	1.14	—1.32	3.30	0.03	0.0	4	17	8	6
1898	47.5	—3.3	88	17	3.56	+1.10	5.75	1.27	3.6	8	7	9	15
1899	56.7	+5.9	95	17	1.73	—0.73	4.64	0.15	0.0	5	17	8	6
1900	59.3	+8.5	90	21	3.91	+1.45	8.00	1.20	0.0	7	16	7	8
1901	54.2	+3.4	88	20	1.98	—0.48	4.23	0.45	T.	6	17	7	7
1902	53.5	+2.7	83	20	2.54	+0.08	6.66	0.28	T.	5	16	8	7
1903	52.2	+1.4	90	16	1.95	—0.51	4.50	0.32	0.0	5	19	6	6
1904	53.1	+2.3	96	16	1.67	—0.79	4.43	0.14	T.	6	15	8	8
1905	49.2	—1.6	95	16	3.40	+0.94	5.36	1.20	1.6	8	16	6	9
1906	50.5	—0.3	87	7	1.96	—0.50	4.25	0.50	0.1	6	14	7	10
1907	50.4	—0.4	85	10	1.50	—0.96	3.71	0.30	0.0	5	20	5	6
1908	51.1	+0.3	89	17	3.38	+0.92	8.83	0.58	2.6	8	16	6	9
1909	49.7	—1.1	97	10	2.22	—0.24	4.70	0.48	T.	6	16	6	9
1910	55.2	+4.4	93	10	0.77	—1.69	1.73	T.	0.1	4	21	4	6
1911	48.7	—2.1	87	14	3.34	+0.88	7.03	0.73	0.6	10	12	8	11
1912	52.2	+1.4	92	16	2.98	+0.52	5.77	1.03	T.	6	21	3	7
1913	49.2	—1.6	89	—2	3.03	+0.57	7.29	0.35	1.2	9	15	8	8
1914	55.9	+5.1	88	14	3.23	+0.77	6.64	0.74	T.	9	16	6	9
1915	54.4	+3.6	86	19	1.31	—1.15	3.25	T.	T.	5	19	6	6
1916	50.9	+0.1	92	6	2.00	—0.46	4.33	0.20	2.0	8	16	7	8

T indicates an amount too small to measure.

NOVEMBER.

Like the preceding month, November, as a whole, was a very pleasant autumn month, yet at times the conditions were unusual. The most marked feature being the cold spell from the 13th to 15th, inclusive, when the lowest temperature of record, for the first half of November, occurred at many stations. The heavy rains of the 7th-8th was followed by snow on the 11th-12th, but the remainder of the month was mostly bright and clear, making favorable conditions for all kinds of out-door occupations. Practically all of the corn was harvested and considerable plowing was done. Wild flowers, especially dandelions, were in bloom at the close of the month and winter wheat was in a thriving condition. All of the larger rivers remained open during the entire month, but heavy floating ice was reported in northern sections about the middle of the month and the smaller, shallow lakes were frozen over.

Pressure—The mean pressure (reduced to sea level) for the State was 30.09 inches. The highest recorded was 30.64 inches at Sioux City on the 13th, and the lowest was 29.35 inches, at Davenport, on the 23rd. The monthly range was 1.29 inches.

Temperature—The mean temperature for the state, as shown by the records of 108 stations, was 37.3°, or 3.3° above the normal. By divisions, three tiers of counties to the division, the means were as follows: Northern, 34.2°, or 1.4° above normal; Central, 37.5°, or 2.3° above the normal; Southern, 40.3°, or 3.0° above the normal. The highest monthly mean was 44.0° at Keokuk and the lowest was 31.3° at Decorah. The highest temperature reported was 80°, at Sigourney on the 7th; the lowest was 8° below zero, at Alton and Sibley on the 14th. The range for the state was 88°.

Precipitation—The average precipitation for the state, as shown by the records of 114 stations, was 1.61 inches, or 0.10 inch above the normal. By divisions the averages were as follows: Northern, 1.42 inches, or 0.09 inch above the normal; Central, 1.47 inches, or 0.11 inch less than the normal; Southern, 1.93 inches or 0.32 inch more than the normal. The greatest amount, 3.65 inches, occurred at Onawa, and the least, 0.05 inch, at Matlock. The greatest amount in 24 consecutive hours, 2.25 inches, occurred at Bedford on the 8th.

Humidity—The average relative humidity for the state at 7 a. m. was 79 per cent, and at 7 p. m. 70 per cent. The mean for the month was 74 per cent, or 3 per cent below the normal. The highest monthly mean was 82 per cent, at Charles City, and the lowest, 68 per cent, at Des Moines.

Snow—The average fall for the whole state was 3.6 inches. The greatest amount was 12 inches, at Northwood.

Wind—The prevailing direction of the wind was from the northwest. The highest velocity reported from a regular Weather Bureau station was 48 miles an hour from the south, at Sioux City on the 6th.

Sunshine and Cloudiness—The average per cent of the possible amount of sunshine was 56, or 4 per cent above the normal. The per cent of the possible amount at the regular Weather Bureau stations was as follows: Charles City, 67; Davenport, 61; Des Moines, 61; Dubuque, 50; Keokuk, 67; Sioux City, 67.

Miscellaneous Phenomena—Dates of: Fog: 20, 21, 22, 23, 28, 29; Sleet: 11, 12; Thunderstorms: 7, 8.

Rivers—Rivers remained nearly stationary and at a low stage during the month.

COMPARATIVE DATA FOR THE STATE—NOVEMBER.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With pre. .01 in. or more	Clear	Partly cloudy	Cloudy
1890 ----	38.6	+3.6	78	— 2	1.46	—0.05	3.55	0.71	------	8	15	8	7
1891 ----	30.5	—4.5	84	—24	1.70	+0.19	3.64	0.06	------	7	10	8	12
1892 ----	33.3	—1.7	70	— 3	1.10	—0.41	3.16	0.05	1.8	4	11	8	11
1893 ----	34.0	—1.0	86	—13	1.17	—0.34	2.56	0.05	4.6	4	16	8	6
1894 ----	32.7	—2.3	72	— 5	0.92	—0.59	2.42	T	0.4	4	9	11	10
1895 ----	34.3	—0.7	86	—12	1.51	0.00	3.01	0.45	4.9	6	9	8	13
1896 ----	29.6	—5.4	82	—15	1.83	+0.32	4.51	0.16	2.9	6	9	8	13
1897 ----	34.3	—0.7	81	—19	0.66	—0.85	2.24	T	1.2	5	12	8	10
1898 ----	32.2	—2.8	78	—17	1.50	—0.01	3.61	0.33	8.7	6	14	8	8
1899 ----	43.9	+8.9	86	8	1.20	—0.31	2.97	0.13	0.5	5	12	8	10
1900 ----	33.5	—1.5	79	— 6	1.06	—0.45	3.35	T	3.7	6	12	7	11
1901 ----	35.8	+0.8	77	2	0.86	—0.65	2.30	0.20	2.6	3	18	6	6
1902 ----	41.2	+6.2	79	4	2.13	+0.62	4.19	0.16	1.8	7	9	7	14
1903 ----	34.2	—0.8	76	— 5	0.52	—0.99	1.74	T	1.1	8	13	8	9
1904 ----	41.0	+6.0	80	4	0.15	—1.36	0.50	0.00	0.5	1	20	6	4
1905 ----	38.4	+3.4	70	—12	2.84	+1.33	5.30	0.90	0.6	5	16	7	7
1906 ----	35.4	+0.4	76	— 5	2.03	+0.52	3.86	0.35	4.4	8	9	7	14
1907 ----	36.7	+1.7	68	— 4	1.03	—0.48	2.27	0.05	0.9	4	17	6	7
1908 ----	39.3	+4.3	80	5	1.56	+0.05	3.31	0.21	1.4	5	14	7	9
1909 ----	42.4	+7.4	84	— 3	5.39	+3.88	11.48	2.07	6.8	10	10	7	13
1910 ----	33.4	—1.6	76	5	0.34	—1.17	1.03	T	0.7	3	13	9	8
1911 ----	29.9	—5.1	79	— 8	1.42	—0.09	4.99	0.11	1.6	6	11	8	11
1912 ----	40.1	+5.1	77	6	0.98	—0.53	2.38	0.00	T	2	18	8	4
1913 ----	44.1	+9.1	78	10	1.18	—0.33	3.49	0.20	0.4	6	11	7	12
1914 ----	41.0	+6.0	80	— 4	0.22	—1.29	0.95	0.00	T	2	19	6	5
1915 ----	40.2	+5.2	83	— 5	1.94	+0.43	4.86	0.30	1.2	6	11	10	9
1916 ----	37.3	+3.3	80	— 8	1.61	+0.10	3.65	0.05	3.6	5	16	6	8

T indicates an amount too small to measure, or less than .005 inch precipitation and less than .05 inch snowfall.

DECEMBER.

No exceptional features were recorded during the month, except a thunderstorm which occurred over the western three-fourths of the state on the night of the 25th-26th. The second and third decades, however, were much colder than usual and the first week was exceptionally warm; the daily means ranging from 10° to 25° above the normal. After the 7th the temperature was almost continuously below the normal, and from the 19th to the 22nd, inclusive, the weather was unusually cold, the daily values being from 13° to 30° below the normal. The 4th was the warmest day, when the temperature was generally up to 60° or higher. The thunderstorm on Christmas night began in the late afternoon in the western part of the state, gradually moving eastward and passing over Des Moines between 8:00 p. m. and 9:00 p. m., and continuing until after midnight in the counties to the eastward. It was accompanied by rain, sleet and wind squalls. The rain froze as it fell and covered everything with a glaze of ice, which delayed railway and street car traffic and did much damage to telegraph and telephone lines. The small amount of corn in the fields at the end of November was gathered and cribbed during the first week of December and all farm work was finished for the season. The ice harvest began in many localities on the 26th.

Pressure.—The mean pressure (reduced to sea level) for the state was 30.02 inches. The highest recorded was 30.71 inches, at Davenport, on the 29th, and the lowest was 29.40 inches, at Sioux City, on the 2nd. The monthly range was 1.11 inches.

Temperature.—The mean temperature for the state, as shown by the means of 107 stations, was 18.7°, or 5.2° lower than the normal for Iowa. By divisions, three tiers of counties to the division, the mean temperatures were as follows: Northern, 15.1°, or 6.1° lower than the normal; Central, 19.1°, or 5.0° lower than the normal; Southern, 22.0°, or 4.4° lower than the normal. The highest monthly mean was 26.0°, at Keokuk, and the lowest monthly mean was 11.8°, at Inwood. The highest temperature reported was 67°, at Bloomfield, on the 3rd, Earlham, on the 4th, and Columbus Junction and Keokuk, on the 7th, and the lowest temperature reported was —25°, at Sibley, on the 20th, the range for the state being 92.

Humidity.—The average relative humidity for the state at 7 a. m., was 80.3 per cent, and at 7 p. m., it was 71.4 per cent. The mean for the month was 75.8 per cent, or about 3.7 per cent less than the normal. The highest monthly mean was 84 per cent, at Charles City, and the least reported was 69.4 per cent at Omaha.

Precipitation.—The average precipitation for the state, as shown by the records of 109 stations, was 1.04 inch, or 0.18 inch less than the normal. By divisions, the averages were as follows: Northern, 0.98 inch, or 0.09 inch less than the normal; Central, 1.09 inch, or 0.16 inch less than the normal; Southern, 1.04 inch, or 0.31 inch less than the normal. The greatest amount, 2.00 inches, occurred at Fort Madison, and the least, 0.35 inch, at Alta. The greatest amount in any 24 consecutive hours, 0.07 inch, occurred at Northboro, on the 25th.

Snow.—The average snowfall for the state was 6.7 inches. The greatest amount, 12.0 inches, occurred at Northwood, and the least, 0.5 inch, at Gilman. Measurable precipitation occurred on an average of six days.

Wind.—The prevailing direction of the wind was from the northwest. The highest velocity reported was at the rate of 46 miles an hour from the northwest, at Sioux City, on the 16th.

Sunshine and Cloudiness—The average percentage of the possible amount of sunshine was 57 per cent, or about 8 per cent more than the normal. The percentage of the possible amounts being: Charles City, 49; Davenport, 52; Des Moines, 59; Dubuque, 61; Keokuk, 55; Sioux City, 60, and Omaha, Nebr., 62 per cent. The average number of clear days was 15; partly cloudy, 8; cloudy, 8.

Miscellaneous Phenomena.—Dense fog occurred in the extreme eastern and southern counties on the 4th and 7th, and in most of the southern and eastern counties on the 26th. Lunar halos were reported on the following dates: 1st, 3rd, 9th, 10th, 11th, 15th; Solar halos, 9th, 12th, 15th, 16th, 17th, 21st, 22nd, 23rd; Sleet, 25th, 26th, 31st; Thunderstorms at a few scattered places in the southeastern portion of the state on the 4th, in the Mississippi River counties on the 7th, and very generally in all but the northeastern and extreme southeastern counties on the night of the 25th-26th.

COMPARATIVE DATA FOR THE STATE—DECEMBER.

YEAR	Temperature				Precipitation					Number of Days			
	Mean	Departue	Highest	Lowest	Total	Departure	Greatest	Least	Snow fall	With precipitation .01 in.	Clear	Partly cloudy	Cloudy
1890 ----	29.1	+5.2	72	—18	0.45	—0.77	1.40	0.00	------	3	17	7	7
1891 ----	32.3	+8.4	72	—14	2.41	+1.19	4.50	1.21	------	6	14	9	8
1892 ----	18.9	—5.0	68	—29	1.65	+0.43	3.04	0.20	10.9	8	9	8	14
1893 ----	22.0	—1.9	70	—21	1.31	+0.09	2.80	0.46	7.6	7	10	9	12
1894 ----	30.1	+6.2	73	—17	0.95	—0.27	1.75	0.25	1.3	3	15	6	10
1895 ----	25.4	+1.5	63	—16	1.63	+0.41	5.74	0.00	4.1	5	11	9	11
1896 ----	30.8	+6.9	70	—10	0.65	—0.57	1.79	T	1.6	4	10	8	13
1897 ----	18.0	—5.9	60	—25	1.65	+0.43	3.22	0.61	15.9	6	11	7	13
1898 ----	18.1	—5.8	60	—25	0.48	—0.74	1.70	T	3.9	3	15	8	8
1899 ----	22.6	—1.3	75	—19	1.61	+0.39	4.28	0.10	4.3	5	12	9	10
1900 ----	26.9	+3.0	63	—10	0.45	—0.77	2.70	T	2.4	4	13	6	12
1901 ----	20.5	—3.4	64	—31	0.93	—0.29	2.75	0.05	5.4	6	10	9	12
1902 ----	20.1	—3.8	59	—20	2.23	+1.01	5.51	0.67	12.9	8	9	6	16
1903 ----	19.6	—4.3	58	—27	0.41	—0.81	1.96	T	3.7	4	11	9	11
1904 ----	23.4	—0.5	67	—19	1.44	+0.22	3.68	0.06	12.3	5	12	7	12
1905 ----	27.0	+3.1	62	—11	0.52	—0.70	1.69	T	4.2	3	19	6	6
1906 ----	25.7	+1.8	65	— 9	1.43	+0.21	2.81	0.37	1.4	6	11	7	13
1907 ----	28.8	+4.9	62	— 9	1.00	—0.22	2.28	0.05	4.7	5	10	7	14
1908 ----	27.2	+3.3	67	—17	0.57	—0.65	2.07	0.05	3.8	3	15	8	8
1909 ----	15.1	—8.8	60	—26	2.18	+0.96	6.10	0.80	13.7	11	10	5	16
1910 ----	23.4	—0.5	57	—14	0.37	—0.85	1.39	0.01	3.0	3	15	7	9
1911 ----	27.9	+4.0	60	—24	2.57	+1.35	4.43	0.62	12.6	7	13	6	12
1912 ----	29.2	+5.3	64	—13	0.74	—0.48	1.75	0.10	1.1	3	18	7	6
1913 ----	32.0	+8.1	65	—13	1.02	—0.20	4.73	0.00	1.3	4	15	5	11
1914 ----	15.7	—8.2	63	—31	1.30	+0.80	2.24	0.57	11.1	9	10	6	15
1915 ----	25.0	+1.1	56	—10	0.69	—0.53	1.70	T	4.6	5	11	8	12
1916 ----	18.7	—5.2	67	—25	1.04	—0.18	2.00	0.35	6.7	6	15	8	8

T indicates an amount too small to measure, or less than .005 inch precipitation and less than .05 inch snowfall.

MONTHLY STATE DATA FOR 1916.

MONTH	Temperature.				Precipitation.					No. of Days.				Prevailing direction of wind.
	Mean.	Departure from normal.	Highest.	Lowest.	Average.	Departure from normal.	Greatest.	Least.	Snowfall.	.01 inch or more of precipitation.	Clear.	Partly cloudy.	Cloudy.	
January	17.8	—0.1	63	—34	2.62	+1.57	6.07	0.85	7.2	10	12	6	13	nw.
February	19.6	—1.5	61	—32	0.55	—0.60	1.38	0.05	6.0	4	14	8	7	nw.
March	35.2	+1.9	80	—18	1.57	—0.20	5.80	0.23	2.9	6	11	9	11	nw.
April	47.1	—1.6	90	11	2.62	—0.24	5.92	1.13	1.1	10	10	9	11	nw.
May	59.9	—0.6	94	27	4.93	+0.36	10.44	2.14	T.	12	13	10	8	sw.
June	64.5	—4.6	[illegible]	38	3.71	—0.67	7.96	1.41	0	10	13	11	6	nw.
July	79.7	+5.6	105	48	1.78	—2.18	6.87	0.10	0	5	23	7	1	s.
August	74.0	+2.2	106	35	2.58	—1.10	6.23	0.49	0	7	18	9	4	sw.
September	62.5	—0.9	98	21	3.89	+0.53	9.71	1.45	0	7	17	8	5	sw.
October	50.9	+0.1	92	6	2.00	—0.46	4.33	0.20	2.0	8	16	7	8	s.
November	37.3	+2.3	80	— 8	1.61	+0.10	3.65	0.05	3.6	5	16	6	8	nw.
December	18.7	—5.2	67	—25	1.04	—0.18	2.00	0.35	6.7	6	15	8	8	nw.
Annual	47.2	—0.2	106	—34	28.90	—3.07	10.44	0.05	29.5	90	178	98	90	nw.

COMPARATIVE DATA FOR THE STATE---Annual

Year.	Temperature.					Precipitation in inches.			
	Mean annual.	Highest.	Date.	Lowest.	Date.	Annual.	Greatest annual.	Least annual.	Av. snowfall.
1890	48.0	110	July 13	—27	January 22	31.30	45.74	16.00	------
1891	47.3	106	August 9	—31	February 4	32.90	49.05	23.48	------
1892	46.6	104	July 11	—38	January 19	36.58	48.77	24.78	34.2
1893	45.7	102	July* 13	—36	January 14	27.59	33.27	19.19	37.2
1894	49.7	109	July 26	—37	January 25	21.94	29.81	15.65	19.2
1895	47.2	104	May 28	—33	February 1	26.77	35.25	18.57	26.0
1896	48.6	104	July 3	—20	January 4	37.23	51.60	28.68	22.6
1897	47.8	106	July* 23	—30	January 25	26.98	36.18	20.21	38.8
1898	47.7	103	August 20	—25	December 31	31.34	55.47	19.51	40.3
1899	47.3	104	September 6	—40	February 11	28.68	42.06	21.79	23.4
1900	49.3	103	August 3	—27	February 15	35.05	47.33	25.05	25.8
1901	49.0	113	July 22	—31	December 15	24.41	37.69	16.35	38.5
1902	47.7	98	July 30	—31	January 27	43.82	58.80	20.14	28.0
1903	47.2	101	August 24	—27	December 13	35.39	50.53	26.41	19.4
1904	46.3	100	July 17	—32	January 27	28.51	38.93	19.34	29.2
1905	47.2	104	August 11	—41	February* 2	36.56	52.26	24.66	38.3
1906	48.4	102	July 21	—32	February 10	31.60	44.34	20.63	32.8
1907	47.4	102	July 5	—31	February 5	31.61	43.90	19.93	24.0
1908	49.5	101	August 3	—18	January 29	35.26	49.98	24.11	22.7
1909	47.4	103	August* 15	—26	February* 15	40.01	53.48	27.20	49.0
1910	48.6	108	July 16	—35	January 7	19.87	27.99	12.11	23.4
1911	49.5	111	July* 3	—35	January 3	31.37	46.77	19.74	35.3
1912	46.4	104	September 8	—47	January 12	28.89	33.13	15.25	39.5
1913	49.7	108	July* 16	—25	January 8	29.95	45.18	20.31	25.4
1914	49.1	109	July 12	—31	December 26	31.93	44.11	23.30	27.5
1915	47.8	99	May 14	—32	January 28	39.53	51.15	27.29	31.3
1916	47.2	106	August 4	—34	January 13	28.90	46.34	22.48	29.5

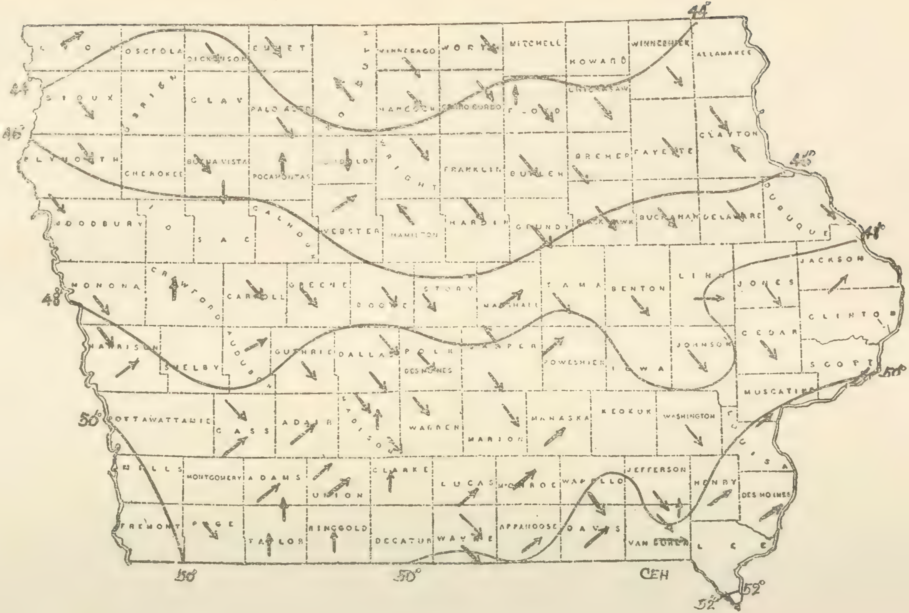
*And other dates.

DATES OF KILLING FROSTS, 1916.

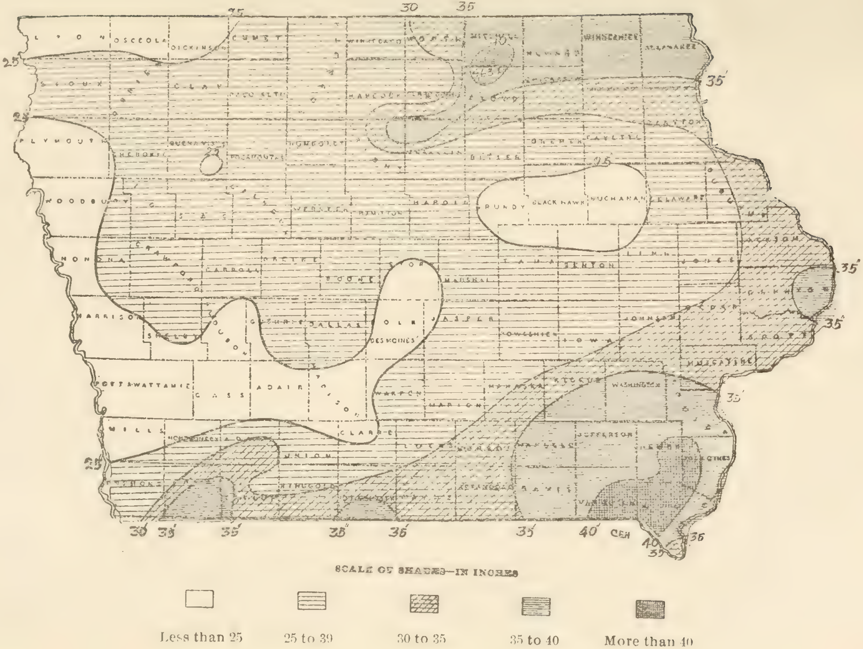
STATIONS	Killing Frosts.	
	Last in Spring.	First in Autumn.
Northern Div.		
Algona	April 30†	Sept. 15
Allison	May 18†	Sept. 29
Alta	May 2	Sept. 15
Alton	May 18	Sept. 15
Belmond	May 2	Sept. 17
Britt	May 18	Sept. 15
Charles City	May 2	Sept. 29
Decorah	May 2	Sept. 29
Elkader	May 18	Sept. 16
Estherville	May 3	Sept. 15
Fayette	May 2	Sept. 17
Forest City	May 2	Sept. 15
Humboldt	April 9	Sept. 15
Inwood	May 18	Sept. 15
Lake Park	May 3	Sept. 15
LeMars	May 3	Sept. 29
Mason City	May 2	Sept. 29
Matlock	May 18	Sept. 17
New Hampton	May 2†	Sept. 17†
Nora Springs	May 2	Sept. 17
Northwood	May 2	Sept. 15
Pocahontas	May 2†	Sept. 17
Postville	May 2	Sept. 17
Rock Rapids	May 18†	Sept. 15†
Sanborn	May 18	Sept. 15
Sibley	----------	Sept. 28
Sioux Center	May 11†	Sept. 15†
Spencer	----------	----------
Storm Lake	----------	Sept. 15
Washta	May 19	Sept. 15
Waverly	May 2	Sept. 29
West Bend	May 2†	Sept. 15
Central Div.		
Ames	May 2†	Sept. 18
Audubon	May 18†	Sept. 15
Baxter	April 17†	Sept. 29
Belle Plaine	May 18	Sept. 18
Boone	April 10†	Sept. 29
Carroll	May 18	Sept. 15
Cedar Rapids	April 10†	Sept. 29
Clinton	May 2†	Sept. 29
Davenport	April 9	Sept. 29
Delaware	May 18	Sept. 18†
Denison	May 18†	Sept. 15†
Des Moines	April 9	Sept. 28
Dubuque	April 9	Oct. 10
Fort Dodge	April 9†	Sept. 29
Grinnell	April 9†	Sept. 28†
Grundy Center	May 2†	Sept. 29
Guthrie Center	April 18†	Sept. 24
Harlan	May 18	Sept. 15
Independence	May 2†	Sept. 18
Iowa City	May 18	Sept. 18
Iowa Falls	May 2†	Sept. 17
Jefferson	May 18†	Sept. 29
Little Sioux	May 18†	Sept. 15†
Logan	May 18†	Sept. 15†
Maquoketa	May 2†	Sept. 16
Marshalltown	May 2†	Sept. 18
Monroe	May 18	Sept. 29
Olin	May 2†	Sept. 15
Onawa	May 18†	Sept. 29
Perry	May 2†	Sept. 29
Rockwell City	May 2†	Sept. 15
Sac City	May 2†	Sept. 15
Sioux City	April 9	Sept. 29
Tipton	May 2†	Sept. 18†
Toledo	May 2†	Sept. 17
Waterloo	May 2†	Sept. 17
Waukee	May 18†	Sept. 29
Webster City	May 18	Sept. 17
Williamsburg	May 2	Sept. 18
Southern Div.		
Afton	April 9	Sept. 29
Albia	April 10†	Sept. 18†
Allerton	April 8†	Sept. 29
Atlantic	May 18	Sept. 29
Bedford	May 18	Sept. 16
Bloomfield	April 9†	Sept. 29†
Bonaparte	April 9†	Sept. 18†
Burlington	April 9†	Oct. 10
Centerville	April 8†	Sept. 18
Chariton	May 18†	Sept. 18†
Clarinda	April 11†	Sept. 29
Columbus Jct.	May 2	Sept. 29
Corning	May 18	Sept. 15
Corydon	May 18	Sept. 29
Creston	May 18	Sept. 29†
Cumberland	----------	Sept. 28
Earlham	May 18	Sept. 15
Fairfield	May 2†	Sept. 29†
Fort Madison	----------	----------
Greenfield	April 10	Sept. 29
Indianola	May 2	Sept. 29
Keokuk	April 9	Oct. 21
Keosauqua	May 2	Sept. 18
Knoxville	----------	Sept. 18†
Lamoni	May 2†	Sept. 15
Lenox	April 10†	Sept. 29†
Mt. Ayr	April 10†	Sept. 29
Mt. Pleasant	May 2†	Sept. 29†
Murray	April 10†	Sept. 29†
Northboro	April 10†	Sept. 29†
Oskaloosa	Mar. 28	Sept. 29†
Ottumwa	April 9†	Sept. 29†
Pella	April 28†	Sept. 18
St. Charles	April 9†	Sept. 29
Sigourney	May 18	Sept. 29
Stockport	May 18	Sept. 29
Thurman	April 29†	Sept. 15†
Washington	April 9	Sept. 15
Winterset	April 9†	Sept. 29
Omaha, Neb.	April 9†	Oct. 19†

†Date of last temperature of 32° or lower in the spring, or first temperature of 32° or lower in the autumn (as the case may be) when frost was not reported.

MEAN ISOTHERMS AND PREVAILING WINDS, YEAR 1916.


44°
46°
48°
50°
52°
CEH
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
O'BRIEN
CLAY
PALO ALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
DES MOINES
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE

TOTAL PRECIPITATION, YEAR 1916.


25
30
35
35
40
LYON
OSCEOLA
DICKINSON
EMMET
WINNESHIEK
ALLAMAKEE
HOWARD
MITCHELL
WORTH
WINNEBAGO
SIOUX
CLAY
PALO ALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
FRANKLIN
BUTLER
BREMER
WOODBURY
WEBSTER
HAMILTON
HARDIN
GRUNDY
BLACK HAWK
BUCHANAN
DELAWARE
MONONA
CARROLL
GREENE
BOONE
MARSHALL
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
DES MOINES
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
RINGGOLD
APPANOOSE
DAVIS
VAN BUREN
LEE
SCALE OF SHADES—IN INCHES
Less than 25
25 to 39
30 to 35
35 to 40
More than 40

CLIMATE AND CROP REVIEWS

January was characterized by sudden and marked variations in temperature, excessive precipitation, the severe cold wave of the 12-13th, and a series of sleet and ice storms from the 25th to the 29th. An extreme instance of a marked change in temperature occurred at Davenport on the 5th when the temperature fell from 55° to 1°. With reference to precipitation, the month was decidedly the wettest of its name in the twenty-seven years' climatological history of the state. Every station in the state reported an excess of moisture, a fact in itself of note. Most of the precipitation was in the from of rain and sleet, and the fall of sleet was the heaviest in years, amounting to about an inch in some districts and was reported somewhere in the state on more than half the days of the month, culminating on the 28th and 29th in a fall of rain at temperatures below freezing. Up to that time the several accretions of sleet had formed a mass varying from half an inch to an inch in thickness, and this was converted by the freezing rain practically into a layer of ice that covered the entire landscape. Walking became hazardous and accidents as the result of falls occurred by the hundred. Many people were out skating on the golf links in Des Moines, and in the country districts men skated from farms to town. The cold wave of the 12th-13th was the severest since the memorable January of 1912.

Although colder than usual, February was a pleasant month, with fair, sunshiny weather predominating. The deficiency of temperature was due to continuous low readings during the first two weeks and during that period readings on several mornings were below zero; but, except in the extreme northwestern counties, no abnormally low temperatures occurred. From the 15th to the 25th the temperature was almost continuously above the normal and the weather was very pleasant, but the high temperature caused the snow to melt rapidly, resulting in high water in all streams. In some cases ice jams damaged bridges and caused flooding of low lands.

March was somewhat milder and drier than usual, but these average conditions were not uniform over the state. In the extreme eastern counties, the temperature was about normal, thence westward the excess increased until at the Missouri river it amounted to an average of 4° a day. The precipitation was below the normal, except over the southeastern and extreme eastern counties, where, in some localities, occurred the heaviest March precipitation of record, and most of it fell between the 21st and 26th. The fall at Washington during the time amounted to 5.58 inches. On the 26th the rainfall there was 4.41 inches, which compares with the heaviest 24-hour amounts liable to occur at any time of the year in Iowa. Another feature of the month was the unseasonably high temperature on the 12th over the southern half of the state. At Des Moines on that day the temperature rose to a higher degree (77°) than ever before recorded so early in the season. The warm weather started grass to growing, so that by the close of the month lawns were almost ready for mowing in southern sections. Spring seeding began in the southern counties, except over the wet sections of the southeast, but in the northern part of the state no field work was done.

April was cold, cloudy and showery, and as respects the growth of vegetation, backward. At the close of the month the season was one to two weeks late. In some localities in the northern sections oats seeding was unfinished at the close of the month, yet in other localities seeding was completed and some ground prepared for corn. In southern counties corn planting was in progress and fruit trees were beginning to bloom as far north as central Iowa. A storm of tornadic character did considerable damage to buildings in Wright County on the evening of the 19th.

With the exception of abnormally heavy rainfall in the southern counties, the average temperature and precipitation for May varied but slightly from the normal. Yet over large areas in the southern counties the monthly amounts of rainfall were in excess of 7 inches, and in parts of Des Moines, Lee and Van Buren Counties more than 9 inches fell. Frost did some damage on the 18th. On account of the wet weather a considerable corn acreage was unplanted at the close of the month, and much of the corn that was up could not be cultivated.

June was characterized by its persistent coolness and a severe rainstorm in the northeastern counties on the night of the 1st. It was the coolest June since state-wide observations were begun in 1890. The severe rainstorm will be described under the monthly summary for June. While the month was moderately dry over most of the State, the rains came at such timely intervals that no serious effects of drought were felt in any section. The month closed with the highest temperature since the summer of 1914, and the backward corn made a remarkable response to the excessively warm and humid conditions.

July was warm and dry. The average temperature was 5.6° higher than the normal and readings above 100° were common on several days. The average precipitation was considerably less than one-half of the normal, and only six stations reported an excess. While showers came at rather timely intervals, especially during the first two decades of the month, the geographical distribution was decidedly irregular. In some localities moisture was needed early in the month, but actual droughty conditions did not set in until the last decade. At that time all vegetation was in urgent need of rain and potatoes, garden truck and pastures were suffering severely, while corn was imperiled. The extreme heat was trying to both man and beast. Many persons were prostrated, some fatally, and a large number of animals died. The conditions were, however, unusually favorable for harvesting and threshing, owing to the great number of clear, sunshiny days.

August was marked by a continuance, but in a modified degree, of the hot, dry weather that prevailed in July. The last decade was colder than usual, and light frost occurred at a few northern stations on the 27th-28th. There was 70 per cent of the normal precipitation, and most of this came during the first half of the month. The showers were of inestimable value to all growing crops and especially corn. In some sections, however, that crop had already been seriously damaged by dry weather. After the 15th but little rain fell in any part of the State until the last day of the month.

September, as a whole, was pleasant and favorable for crops and out-door occupations. Much plowing was done, except in the south-central districts, where the drought that began in July continued. Light to killing frosts occurred on the 15th and 18th, and killing frosts and freezing temperatures were almost general on the 29th. The bulk of the corn crop was mature at the time of the killing frosts, and the only injury done was to some of the late planted corn and mostly on low ground.

October was a typical autumn month, the average temperature, rainfall and sunshine approximated the normal very closely. The only feature out of the ordinary being a severe snowstorm on the

19th and 20th, when snow fell in all parts of the State except the extreme eastern counties. Several stations in the northwestern districts reported more than 5.0 inches of snowfall, and in numerous localities the drifts were several feet deep. This storm, together with frequent rains between the 20th and 28th, interferred with corn husking, which had begun earlier than usual. Husking was, however, resumed during the last few days of the month and 20 to 30 per cent of the crop had been gathered by the close of the month. Stock was in pasture, and in many localities flowers were in bloom at the end of the month.

Like the preceding month, November, as a whole, was a very pleasant autumn month, yet at times the conditions were unusual. The most marked feature being the cold spell from the 13th to 15th, inclusive, when the lowest temperature of record, for the first half of November, occurred at many stations. Heavy rains on the 7th-8th were followed by snow on the 11th-12th, but the remainder of the month was mostly bright and clear, making favorable conditions for all kinds of outdoor occupations. Practically all of the corn was harvested and considerable plowing was done.

The only marked variations from the normal for December were the unusually high temperatures during the first week, the almost continuous cold during the remainder of the month, and the thunderstorm on Christmas evening or night, which was accompanied by rain, sleet and wind squalls. The rain froze as it fell and covered everything with a glaze of ice, which delayed railway and street car traffic and did much damage to telegraph and telephone lines. The ice harvest began in many localities on the 26th.

WEATHER AND CROP BULLETINS.

Summaries of Weekly Bulletins Issued During the Season of 1916, for the Weeks Ending on Dates Given.

Bulletin No. 1, April 11, 1916—

With the exception of severe sleet and ice storms early in February, favorable conditions prevailed during the winter, and while cold weather, with freezing temperatures at night, has prevailed most of the time thus far this spring, farm work is progressing rapidly over the southern half of the state. Frost is not yet all out of the ground in the northern sections and the ground, is, in most places, too wet to work. The bulk of the small grain seeding is finished in the southern counties and considerable plowing has been done for corn with the soil in excellent condition. Reports vary as to condition of fall-sown grains, but there is no doubt but what the crops have been seriously damaged in many localities and the acreage of winter wheat has been greatly reduced. Many reports indicate 15 to

30 per cent damage and 25 to 60 per cent reduction in acreage. Cold weather has kept grass and fruit buds almost dormant. All live stock is in a healthy condition and the spring pig crop will be large. A good, warm rain would be very beneficial.

Bulletin No. 2, April 18, 1916—

The last week was exceptionally favorable for farm work. The average temperature was about 4 degrees above the seasonal normal and the rainfall, although light, was general and well distributed on Saturday night and Sunday. Early sown grain in the southern counties is up and shows a fairly good stand, but fall wheat is generally in poor condition as compared with the acreage and stand of a year ago. The high temperatures and drying winds during the first part of the week put most of the ground in the northern part of the state in good working condition and much seeding of spring wheat and oats was done. Plowing for corn is well advanced in southern districts and some potatoes have been planted. Since the warm weather and showers grass is making a good start, but more rain is badly needed. Fruit buds are still nearly dormant in the northern part of the state, but are in an advanced stage in southern counties and a few days will bring them into bloom. Apple, cherry, plums and other fruit promise a good crop of bloom. Spraying of tree fruits will begin in southern Iowa this week and continue northward next week. This is the important spray for apple scab.

Bulletin No. 3, April 25, 1916—

Another cold week has further retarded the growth of vegetation, but frequent and copious showers have been very beneficial to grass and small grain. The showers did, however, interfere with field work in many sections. Spring seeding is nearly finished and the early sown grain is up and shows a fair to good stand. Fall wheat is, in most sections, improving, but winter killing has been considerable, especially on north slopes, and the appearance of Hessian fly is reported in Madison county. Much plowing has been done preparatory to corn planting and some planting has been done in southern counties, where the work will become general during the coming week if favorable weather prevails. Fruit trees are in bloom near the Missouri border, with variable reports as to conditions and prospects, but mostly favorable. Much stock will be in pasture, during the coming week.

Bulletin No. 4, May 2, 1916—

The weather continued too cool for normal growth, but was, in most sections, favorable for farm work, which progressed rapidly. Frost occurred on April 28th and May 2, with freezing temperatures in many localities on the latter date. Moderate to heavy rain fell in all parts of the state on Saturday and Sunday and will be of great benefit to meadows, pastures and small grain and will put soil in excellent condition for planting corn. All small grain except winter wheat is in fine condition. Reports vary as to condition of winter wheat, but, while there has been some winter killing and some fields have been plowed up for oats or corn, reports from many sections indicate a favorable condition. Pastures afford sufficient feed and much stock are now in grass and doing well. Cherry, plum and pear trees are in bloom over the southern half of the state and apple trees are beginning to blossom in the southern counties. The heavy to killing frosts on the last morning of the week will probably do much damage to fruit in bloom.

Bulletin No. 5, May 9, 1916—

The week was exceptionally favorable for farm work and the growth of vegetation. There was an average daily excess of temperature of about 4 degrees, and, while the rainfall was below the normal, the heavy and general rains of the previous week and the light showers on the 6th and 7th kept the ground in excellent tilth. Rapid progress was made in preparing ground for corn and much planting was done in the southern and some in the northern sections. This work will be rushed during the coming week and with favorable weather the bulk of the crop will be in by the 15th and practically all of it by the 20th. Early planted corn is up in the southern counties. All small grain, meadows and pastures improved during the week but winter wheat is still below the normal. Truck crops are doing well. All tree fruits are in bloom, but apples are lighter than last year and peaches are practically nil. The frost on the 2d seems to have done but little damage. Stock in pasture and doing well.

Bulletin No. 6, May 16, 1916—

The week as a whole was cool and wet. Heavy rains fell in all parts of the state on the 13th and 14th. The amounts of rainfall ranging from one to more than four inches and averaging more than two inches, and as a result corn planting has been suspended, many streams are bank full and some lowlands are flooded. However, the first two days of the week were favorable for work and rapid progress was made in planting corn Probably 60 per cent of the crop is planted and much of the early planting in the southern counties is up. The rains will be of great benefit to small grains, grasses, potatoes, fruits and all garden truck. Spring small grain is looking fine and doing well, but winter wheat is much below the normal, and many fields have been plowed up and the ground planted to corn. Pasturage is plentiful and all stock is now in grass.

Bulletin No. 7, May 23, 1916—

The week was unseasonably cool, the average temperature being about seven degrees below the normal. Frost occurred from one to three nights and ice formed in many localities on the morning of the 18th. The rainfall was ample in all districts and excessive in many localities, especially in north central and northwestern counties. Showers on the afternoon of the 21st were accompanied by destructive winds in portions of Polk, Jasper and Marion counties, and did considerable damage to trees and buildings. Rains have further delayed corn planting and plowing and cold, wet ground is causing slow growth of early planted and poor germination of late planted corn. Some replanting is being done on account of insect injury and poor seed. More winter wheat plowed or disked and ground planted to corn. Other small grain, grass and truck doing very well. Frost did some damage to tender vegetation and strawberries, but injury was generally slight and strawberries still give promise of big crop. Tree fruits generally good, but apples will be lighter than last year. Stock is thriving on pasture.

Bulletin No. 8, May 30, 1916—

The last seven days gave the first and only good "corn weather" thus far this season. The average temperature was about six degrees above the normal, and the rainfall was generally light, except over the southern tier of counties, east of Page county, where heavy rain fell on the night of the 23d, and again in the southeastern counties on the night of the 26th. The sunshine was much above the normal. With such favorable conditions crops made rapid growth and much field work was done. Except in the southeastern counties, where it has been too wet, nearly all of the corn is planted, but that planted immediately preceding or during the period from the 12th to the 18th, when cold, wet weather prevailed, did not germinate well, and many of the fields have been or will be replanted. Cultivation has begun in early planted fields in all parts of the state and is becoming general in the central and southwestern districts. Grass, spring sown small grain, truck and all garden stuff looks very well. Rye is heading in the southern counties and winter wheat is beginning to shoot in the central sections. Alfalfa is nearly ready to cut. Hail, accompanying the heavy rain in the southern counties, did considerable damage to cherries and some injury to strawberries, but there will be a big crop of berries and a fair crop of cherries.

Bulletin No. 9, June 6, 1916—

The average temperature for the week was about 3 degrees below the normal and the rainfall was generally light prior to the night of the 5th, except over the northeastern and north central counties, where heavy showers occurred on the night of the 1st. Showers were also general over the southern counties on the night of the 5th. Much damage was caused in the northeastern counties by excessive rains. Creeks were out of their banks, bridges washed out, lowlands flooded and hill land badly washed, but over most of the state the week was generally favorable for field work, and especially in the southeastern counties. Replanting and cultivation of corn progressed rapidly. The stand of corn varies from poor to good. Small grain continues in good condition and meadows and pastures are excellent. The first cutting of alfalfa has begun with heavy yield reported. Winter wheat is heading in central sections. Following is a summary of June 1st reports, showing average condition of crops on that date: Corn, 84 per cent; oats, 98; spring wheat. 96; winter wheat, 78; barley, 97; rye, 92; flax, 92; potatoes, 95; hay, 98 . pastures, 102; alfalfa, 93 per cent.

Bulletin No. 10, June 13, 1916—

The first three days of the week were cold and showery, with heavy rains in the south and eastern counties, which further delayed plowing, planting, replanting and cultivation of corn in those sections. The remainder of the week has been much more favorable, the temperature has been nearly normal, with abundant sunshine. Except in the south and southeastern sections, rapid progress was made in cultivating corn. Most of it has been plowed once and much of it the second time. The replanted corn is up and shows a good stand generally. All small grain, grass, potatoes and garden truck are doing well. Clover and early potatoes are in bloom and oats will begin heading in the central counties during the coming week. Alfalfa is being harvested with good yields, and is being put up in good condition in the western districts, but is being cured with difficulty in eastern sections on account of wet weather.

On June 1st the average condition of live stock was as follows: Cattle and sheep, 99 per cent; hogs, 96; pigs and foals, 92, and horses, 98.

The secretary of the state horticultural society reports condition of fruit as follows: Apples, 51 per cent; American plums, 38; cherries, 50; grapes. 68; red raspberries, 62; black raspberries, 68; blackberries, 78; currants, 65; gooseberries, 66; strawberries, 84 per cent of a full crop. The average condition is 2 per cent less than last year, but apples are 20 per cent below the report of last year and strawberries are 12 per cent higher.

Bulletin No. 11, June 20, 1916—

The week was unseasonably cool with a decided deficiency of rainfall and an excess of cloudiness. The average daily temperature was about 6 degrees below the normal and the nights were especially cool. Though the rainfall was below the normal, showers were frequent, but not sufficiently heavy to interfere materially with farm work. The cultivation of corn was rushed and in the southeastern counties planting and replanting was finished. The fields are now generally clean, but the crop is a week to ten days late. Over a large part of the state the second cultivation is nearing completion. Small grain is generally in good condition and doing well, but in some localities oats are yellow, and rust is reported in winter wheat in Marion and Madison counties. Early oats and barley are heading. First cutting of alfalfa secured in fine condition, except in eastern counties where wet weather did some damage. Potatoes and garden truck still doing well, but a good rain and warmer weather is needed for corn and truck, and rain would be highly beneficial to pastures, meadows, small grain and small and tree fruits. A fair crop of cherries is now being harvested.

Bulletin No. 12, June 27, 1916—

The week as a whole was cool, cloudy and showery, but the last three days gave much higher temperature and more sunshine. The average daily deficiency of temperature for the week was about five degrees, and, though showers were frequent, the rainfall was generally below the normal, except in the southern counties where there was an excess of moisture. Over the larger part of the state rapid progress was made in cultivating corn, and most of it has been plowed the second time and in a few localities the third cultivation has begun. The fields are generally clean, and the corn has a good color, but is small and backward. Some of the acreage intended for corn in the southeastern counties has not been planted on account of continued wet weather, and will be devoted to Soudan grass, millet or cowpeas. All spring-sown grains are generally in good condition and give promise of good yields, though in many localities oats are heading short. More reports are received of red rust in winter wheat in the southern counties. Some clover hay was cut. Potatoes are doing well, notwithstanding the fact that bugs are numerous. Several local wind squalls did considerable damage to small buildings and trees and blew off many apples and plums.

Bulletin No. 13, July 4, 1916—

The last seven days gave the highest temperature since the summer of 1914, and, as there was an abundance of sunshine the conditions were excellent for growth of corn and killing weeds. Only a few scattered showers occurred prior to the 4th, but on the last day of the week, local showers, some heavy, occurred in the central counties. Corn made very rapid growth and much of it is now nearly up to the normal. Many fields have been laid by and practically all of it is clean. Clover hay harvest is in progress and is being secured in prime condition. Some mixed hay has also been cut. Timothy is in bloom and will soon be ready to cut. The yield of clover is generally heavy, but timothy ranges from fair to good. Winter wheat and rye is ripening and harvesting will begin in the southern counties on or before the 8th. Oats and barley are also beginning to turn in the southern sections. As a whole small grain is generally good, but winter wheat is badly rusted in some localities and oats have headed short. Potatoes, truck crops and pastures are still in good condition, but rain would be beneficial and is badly needed in some localities.

Bulletin No. 14, July 11, 1916—

Continued hot and dry weather has been very favorable for finishing the cultivation of corn, haying and harvesting. The average temperature was about 1 degree above the normal in the eastern part of the state and from 2 to 3 degrees above in the western section. Only a few light and scattered showers occurred during the week, and the sunshine was excessive. Corn continued to make very rapid growth, and much of it is now up to the normal in size and has a strong, healthy appearance. Much clover and some timothy hay was put up in excellent condition. Winter wheat and rye harvest has begun in the southern counties, and early oats, fall wheat and rye are turning color in the northern part of the state. All garden truck, potatoes, pastures and fruit need rain and corn would be benefited by a good shower.

Following is a summary of July 1st crop report:

Acreage. Corn, 9,818,500 acres; oats, 4,979,800; winter wheat, 449,000; spring wheat, 143,000; barley, 197,000; rye, 55,800; flax, 5,400; potatoes, 101,400; tame hay, 3,240,600; wild hay, 508,500; alfalfa, 155,000; pastures, 9,717,000 acres.

Condition. Corn, 85 per cent; oats, 94; spring wheat, 92; winter wheat, 80; barley, 95; rye, 93; flax, 90; potatoes, 97; hay, 96; pastures, 100 per cent.

The secretary of the state horticultural society makes the following report on condition of fruit, July 1st: Summer apples, 43 per cent; fall apples, 44; winter apples, 46; pears, 26; American plums, 47; domestic plums, 28; cherries, 35; grapes, 65; red raspberries, 69; back raspberries, 72; backberries, 77; currants, 62; gooseberries, 69 per cent of a full crop. The indications are that the crop of apples would be 30 per cent less than in 1915, other crops about the same as last year.

Bulletin No. 15, July 18, 1916—

Another week of high temperatures and abundance of sunshine with local showers in nearly all parts of the state has kept corn growing very rapidly, and the crop is in fine shape. Tassels are beginning to show in many of the early planted fields. The weather was also favorable for haying and harvesting. All of the clover and much of the timothy hay was put up in excellent condition. Practically all of the winter wheat and early oats are in the shock in the southern counties and threshing has begun in a few localities. Harvest has also begun in the central and northern counties and will be general in all sections during the coming week. Late oats would be benefited by rain, and potatoes, pastures, blackberries, garden truck and tree fruits are in need of rain in many sections, especially in the southeastern counties. The daily maximum temperature ranged from 90 to 100 degrees.

Bulletin No. 16, July 25, 1916—

Another week with high temperatures and abundance of sunshine prevailing has been favorable for harvesting and threshing, which have progressed rapidly. It also has been favorable for the rapid growth of corn, which has now arrived at that stage of development when rain is essential. All of the early fields are in tassel and are shooting nicely. The color is still fine, and where showers have occurred the crop is in excellent condition, but the showers have been very local in character and in spots where no rain has fallen the leaves are beginning to roll badly. The lack of moisture is showing in the appearance and condition of pastures, late potatoes, truck, berries and apples. The small grain harvest is nearing completion in the southern counties and threshing returns as yet do not show more than average yield, but the quality is fine. Much timothy is being cut for seed, with heads well filled, and prospects favorable for a good yield.

Bulletin No. 17, August 1, 1916—

The daily mean temperature of the week was about 10 degrees above the normal and the daily maximum temperatures were near or above the 100 degrees. The rainfall was nil until July 31st or August 1st, when light to moderate and fairly well distributed showers occurred. Corn has generally held its own remarkably well and most of it retains its dark green, healthy color, but firing is noticeable on light soil and poorly cultivated fields. The local showers and somewhat lower temperature prevailing at the close of the week are timely and will be of great benefit to corn. Except for the intense heat and its effect on man and beast, the weather was fine for harvesting and threshing. Harvesting is finished in the southern and central counties and is well advanced in the northern districts. Threshing is being rushed, with generally satisfactory results, but the yields of small grain are variable. The yield of oats ranges from thirty to seventy-five bushels per acre; winter wheat, ten to thirty-five, and barley, twenty to thirty-five bushels per acre. Pastures are dry and late potatoes and truck have been badly damaged by drought and heat. Apples are falling badly in some sections. Many horses were overcome by the heat in the harvest fields. The second crop of alfalfa was secured in excellent condition.

Bulletin No. 18, August 8, 1916—

Hot and generally dry weather continued during the week, but light to copious showers occurred in many localities, especially over the northern half of the state. Where showers occurred corn is generally in fine condition and the early planted fields are now in the roasting ear stage, but in other sections the crop has been more or less damaged. In many localities in the southern counties the hot winds and excessively high temperatures of the 4th caused irreparable damage. Threshing is progressing rapidly and is nearing completion in the southern sections, the conditions being favorable for saving all of the grain in excellent condition. Considerable timothy seed is being threshed with good yields. Seed onions are being harvested in Scott county, but the crop is poor on account of the drought. More and general rains are needed.

Bulletin No. 19, August 15, 1916—

The long, continued hot, dry spell was broken on the 10th by a cool wave and fairly well distributed showers. Showers have been more frequent and better distributed and much more rain has fallen over the southern counties, where it was needed the most, than in the northern half of the state. The rains in southern sections were of great benefit to late corn, pastures, meadows, potatoes, gardens and fruit and have put the ground in fine condition for fall plowing which has begun. The rains came too late, however, to fully repair the damage done to early corn by draught and high temperatures. Many barren stalks appear and pollination was defective. In the northern counties where copious showers occurred during the previous week, corn is in generally good condition. but more rain would be beneficial to corn and is needed for pasture, potatoes and plowing. Threshing continues with satisfactory results. The seed onion crop in Scott county is turning out better than was expected and yields ranging from 150 to 300 bushels per acre are reported.

Bulletin No. 20—August 22, 1916—

The first two days were moderately cool, but the remainder of the week was hot and dry; the maximum temperature being above 95 degrees on four days, and the rainfall was practically nil except in the extreme northwest and extreme southeast counties, where a few light showers occurred. In the southern sections, where heavy rains fell during the previous week, late corn made rapid progress and gives promise of making a fairly good crop. In the central districts corn, on light soil, has been damaged considerably; but in most of the area north of the Chicago and Northwestern railroad the crop is generally in good condition. Rain, however, is badly needed in many sections. Threshing continues in the northern counties without interruption and stacking and shock threshing is practically completed. The third cutting of alfalfa is being secured in excellent condition, but is much lighter than the first and second cuttings. A good, soaking rain is needed at once to insure corn and for pastures, meadows, potatoes, garden truck. apples and to prepare the soil for fall plowing.

Bulletin No. 21, August 29, 1916—

The week was cool and dry. The rainfall was practically nil and a trace of frost was observed on the morning of the 27th in Emmet county. The conditions were favorable for finishing shock threshing and for all outdoor work, but the ground is too dry for fall plowing, although much of that work was done. The corn crop, as a whole, is doing remarkably well, and, over the greater part of the state, promises a fair to good yield. Much of it is well dented and a few of the earliest planted fields will be safe from frost in ten days, but fully 50 per cent of the crop will need thirty days of favorable weather to mature. The crop is further advanced and is in better condition in the northern counties than it is in the southern part of the state. Rains now will be of but little, if any, benefit, except possibly to some of the late fields in the southern counties. Rain would, however, be of great benefit to some the late potatoes, pastures, meadows and for fall plowing. The second crop of clover promises a good yield of seed.

Bulletin No. 22, September 5, 1916—

With the exception of light to moderate showers on August 31st and light and scattered showers during the night of September 3d, dry weather continued and the drought is unbroken. The first few days of the week were moderately cool, but high temperatures prevailed at the close of the week, the last day being the warmest, when readings above 90 degrees were general. The continued dry, hot weather is maturing corn rapidly and some of it is already beyond danger of frost. With normal weather about 60 per cent of the crop will be safe from injury by frost September 20th; 85 per cent by September 30th and practically all of it by October 15th. Over the northern half of the state nearly all of the crop will be safe by September 30th. Corn is being cut and silo filling has begun in some localities, and sweet corn harvest for canning is well under way with yields of three to five tons per acre. Rain now would not be of any benefit to late potatoes, but would be of great help to pastures, meadows and for fall plowing. Wells and springs are failing in some sections and all streams are low.

Bulletin No. 23, September 12, 1916—

Except over the south central counties the week has been generally favorable for all farming interests. The temperature was considerably above the normal, and there was sufficient sunshine to rush the corn crop toward maturity. It is much farther advanced than the reports indicated it would be a week ago. In many localities the bulk of the crop is now beyond danger of frost and probably 65 per cent of all of the crop is fully matured. Silo filling is being rushed and considerable fodder is being cut with corn in excellent condition. Much seed corn has been gathered and sweet corn canning factories are running to full capacity. Copious to heavy showers occurred in nearly all parts of the state, except the south central counties, where the drought is unbroken and becoming serious. Streams are dry and wells are failing, and, as a result, water for stock is getting scarce in many localities. Over the remainder of the state pastures are greatly improved and plowing is progressing rapidly and some winter wheat sown. The rain, however, came too late for potatoes, which will be at the best not more than half of a crop. Rain is badly needed in some southern sections for plowing, seedling and to replenish the water supply.

Bulletin No. 24, September 19, 1916—

The week was mostly cool, dry and clear. The average temperature was about 10 degrees below the normal, and light to killing frost occurred on several dates, but no material damage was done except to the tenderest garden truck until the morning of the 18th, when killing frost with freezing temperature occurred in many localities in the central and eastern counties. Late corn, on low ground, was injured in those sections, but over the larger portion of the state the crop, as a whole, has been but slightly damaged. Dry weather continues in the south central counties, and, as a result, fall plowing and seeding is being delayed. Unless rain comes soon the acreage of winter wheat in those counties will be greatly reduced. The rains on the 11th and 12th in the southwest and southeast put the soil in excellent condition and plowing and seeding are progressing rapidly. Some wheat is up and shows a good stand. Silo filling and shocking corn is being rushed and potato digging has begun.

Bulletin No. 25, September 26, 1916—

The weather during the week was ideal for all out-door operations. The temperature was slightly below the normal, and there was little or no rain. Under such favorable conditions, farm work progressed rapidly.

Many silos were filled and much corn was cut and shocked for fodder. Stack threshing is nearing completion in the northern counties, potatoes are being dug, and much seed corn of excellent quality was gathered. The frost on the 18th did considerable damage to garden truck and to some late corn on low ground, but the bulk of the corn crop was fully matured and received no injury. Probably not more than ten per cent of the crop was damaged, and much of that not seriously. The amount of damage will be greatly lessened by the bright sunshine and fresh to brisk winds that have prevailed during the last week. Even the frosted corn is drying out rapidly. Fall-sown wheat is up in the northern counties and is growing nicely, but in the south-central counties the ground is still too dry to plow. In sections where plowing is possible the acreage of winter wheat will be increased over last year, but will not be as much as in 1914. Pasturage is generally in good condition, except in the south-central counties, and sufficient fall feed is assured. While some of the conditions were at times adverse to the best interest of the agriculturist, yet the year 1916 has been a profitable one and the final reckoning will show that Iowa has maintained her high standard of productiveness.

IOWA CROP REPORT, JUNE, 1916.

Following is a summary showing the condition of crops on June 1st, as compared with the average of past years on that date:

Corn, 84 per cent; oats, 98; spring wheat, 96; winter wheat, 78; barley, 97; rye, 92; flax, 92; potatoes, 95; hay, 98; pastures, 102; alfalfa, 93 per cent.

The average condition of live stock was as follows: Cattle and sheep, 99 per cent; hogs, 96; pigs and foals, 92; and horses, 98 per cent.

The Secretary of the State Horticultural Society reports the condition of fruit as follows: "Apples, 51 per cent; pears, 37; American plums, 58; domestic plums, 30; cherries, 50; grapes, 67; red raspberries, 63; black raspberries, 68; blackberries, 78; currants, 65; gooseberries, 66; strawberries, 84 per cent of a full crop. The average crop condition for June this year is 53 per cent, a decline of 15 per cent from the May average, and 2 per cent below the average for June. Apples are 20 per cent below the report for June last year, and strawberries are 12 per cent higher; other fruits are in about the same condition as reported last year at this time."

Last year on June 1st the conditions were as follows: Corn, 87; oats, 97; spring wheat, 95; winter wheat, 96; barley, 95; rye, 96; flax, 95; potatoes, 96; tame hay and pastures, 97; wild hay, 96; alfalfa, 98 per cent.

IOWA CROP REPORT, JULY 1, 1916.

Acreage of Farm Crops and Estimated Condition of Staple Crops.

Reports received July 1st from township correspondents of the Iowa Weather and Crop Service show the following results as to the acreage and average condition of staple farm crops:

Corn.—As compared with the area reported by the township assessors for 1915, we have an increase of 70,600 acres, or a total of 9,815,500 acres. The average condition on July 1st was 85 per cent, or 6 per cent better than on July 1, 1915.

Oats.—Area sown, 4,9779,800 acres, which is nearly the same as the acreage sown in 1915, there being only 5,000 acres less this year than last year. The average condition is 94, compared with 98 per cent on the same date last year.

Wheat.—The area of winter wheat is 448,945 acres, or 138,000 acres less than in 1915. Spring wheat, 143,000 acres, or 5,000 acres less than last year. The estimated condition of winter wheat is 80 per cent and spring wheat 92 per cent, as compared with 97 and 96 per cent last year.

Barley.—Acreage sown, 197,000 acres; decrease, 5,700 acres; condition, 95 per cent; condition last year was 97 per cent.

Rye.—Acreage, 55,700; condition, 93 per cent.

Flax.—Acreage, 5,400; condition, 90 per cent.

Hay.—Acreage of tame and wild hay, 3,748,000 acres; condition, 96 per cent.

Alfalfa.—Acreage, 155,000; increase, 2,000 acres.

Pastures.—Acreage, 9,717,200; increase, 54,700 acres; condition, 100 per cent.

Potatoes.—Acreage, 101,400; increase, 1,800 acres; condition, 97 per cent.

Fruit.—The Secretary of the State Horticultural Society reports the condition of fruit on July 1st to be as follows: Summer apples, 42 per cent; fall apples, 44; winter apples, 46; pears, 26; American plums, 47; domestic plums, 28; Japanese plums, 20; cherries, 35; grapes, 65; red raspberries, 69; black raspberries, 72; blackberries, 77; currants, 62; gooseberries, 69 per cent of a full crop. The average of all fruits is 50 per cent; three per cent below the June average, and six per cent below the average for July last year. The indications are that the crop of apples will be 30 per cent less than in 1915; other crops about the same as last year.

IOWA CROP REPORT, AUGUST 1, 1916.

Following is a summary showing condition of crops on August 1st, as compared with the average of past years on that date: Corn, 90 per cent; pastures, 91; potatoes, 81; flax, 90. Last year on August 1st the condition of corn was 74 per cent; pastures, 108; potatoes, 102; flax, 94 per cent.

Preliminary reports show the average yield of winter wheat to be about 18 bushels per acre; spring wheat, 15; early oats, 37; late oats, 35; barley, 30; rye, 18 bushels; tame hay, 1.7 tons; wild hay, 1.4 tons. If these averages are maintained by final returns, the state will produce about 8,000,000 bushels of winter wheat; spring wheat, 2,140,000; oats, 180,000,000; barley, 6,000,000; rye, 1,000,000 bushels, and 6,000,000 tons of hay.

The report of the Secretary of the State Horticultural Society shows the condition of fruit on August 1st to have been as follows: Summer apples, 32 per cent; fall apples, 38; winter apples, 40; pears, 18; American plums, 37; domestic plums, 32; Japanese plums, 9; grapes, 52 per cent of a full crop.

The average for all fruits is 31 per cent, or 10 per cent below the average for the last fifteen years for August.

The grape crop is light in eastern Iowa, but nearly normal in the western sections; the quality will be better than last year.

The apple crop will be about one-half of what it was last year. Sprayed orchards will yield 30 to 60 per cent of a full crop, while neglected orchards will not produce more than 5 to 35 per cent of marketable fruit.

IOWA CROP REPORT, SEPTEMBER 1, 1916.

Following is a summary showing the condition of crops on September 1st, as compared with the average of past years on that date: Corn, 83 per cent; potatoes, 58; flax, 88; pastures, 77 per cent. On August 1st the conditions were: Corn, 90 per cent; potatoes, 81; flax, 90; pastures, 91 per cent. On September 1st, 1915, the conditions were: Corn, 66 per cent; potatoes, 94; pastures, 107 per cent.

Corn is very spotted, and the condition ranges from 25 per cent to 110 per cent, depending on the time of planting, kind and amount of cultivation, character of soil, and whether or not showers came at the critical stage of tasseling and shooting. When drought prevailed, and on sandy, light soil, and where not properly cultivated, the condition is poor. There are many barren stalks, and ears that started were poorly fertilized.

On the other hand, where planted early, on good soil, and where the showers were timely, the crop is in excellent condition. The general condition is much better in the northern half of the state than it is in the southern counties, although there are many small areas in the southeast and southwestern sections where the condition is up to above the average.

Preliminary reports indicate the average yield of winter wheat to be 17 bushels per acre; spring wheat, 14; oats, 37; barley, 30; rye, 18; timothy seed, 4.8 bushels per acre. The acreage of timothy cut for seed is 22 per cent greater than last year. Threshing was 85 per cent completed.

FINAL CROP REPORT OF THE STATE.

Total Yield of Soil Products and Value at Farm Price, December 1, 1916.

Following is a summary of reports from crop correspondents of the Iowa Weather and Crop Service, showing the average yield per acre and total yields of staple soil products, and the average price at the nearest station, December 1, 1916:

While the average and total yields of staple crops were not as great as in some of the previous years, on account of a marked deficiency of moisture in June, July and August, the value exceeds that of any year in the history of the state. The total value this year is $597,165,673, or $188,898,770 more than the value of the 1915 crop, and $213,830,351 more than the average of the last ten years. This report does not include or take into consideration live stock, poultry or dairy products.

Corn.—Cool weather during May and June retarded the early growth of corn, but this was balanced by the excessive heat in July and August. The lack of moisture during the earing period resulted in many barren stalks and imperfectly formed ears. With a normal amount of rainfall during July and August the yield would have been five to ten bushels more per acre. The weather during October and November was exceptionally favorable for drying out and gathering the crop, 93 per cent of which was in the cribs on December 1. The area planted this year was 9,813,500 acres, and the average yield was 35.3 bushels per acre, making the total yield 346,193,200 bushels. The average price at the nearest station on December 1st was 81 cents, and the total value, $280,416,500.

Oats.—The estimated area harvested was 4,979,800 acres; average yield, 37 bushels; total yield, 184,131,000 bushels; aggregate value at 49 cents per bushel, $90,224,190.

Spring Wheat.—Area harvested, 142,990 acres; average yield, 13.4 bushels per acre; total yield, 1,927,280 bushels; price per bushel, $1.54; total value, $2,969,011.

Winter Wheat.—The heavy sleet and ice storm in February seriously damaged winter wheat and completely ruined many fields, resulting in a great loss of acreage. The area harvested was 448,945; average yield per acre, 17.5 bushels; total yield, 7,858,900 bushels; average price, $1.58 per bushel; total value, $12,417,062.

Barley.—Average yield per acre, 30.7 bushels; total yield, 6,039,930 bushels; average price, 90 cents; total value, $5,435,937 .

Rye.—Average yield, 22.8 bushels per acre; total yield, 1,270,590 bushels; farm price, $1.15; total value, $1,461,178.

Flax Seed.—Average yield, 10.3 bushels; total yield, 56,015 bushels; total value, at $2.06 per bushel, $115,390.

Timothy Seed.—Area harvested 312,180 acres; average yield, 4.5 bushels; total yield, 1,404,810 bushels; total value, at $2.18 per bushel, $3,061,485.

Clover Seed.—Area harvested, 59,766 acres; average yield, 1.6 bushels; total yield, 95,625 bushels; value, at $9.29 per bushel, $888,356.

Potatoes.—The yield was greatly reduced by the drought in July, August and September, the average yield being 42.3 bushels; area harvested, 161,390 acres; total yield, 4,287,600; average price, $1.75; total value, $7,503,300.

Hay (tame).—Average yield 1.8 tons per acre; total yield, 5,929,720 tons; average price, $9.00; total value, $53,367,480.

Hay (wild).—Average yield, 1.4 tons; total yield, 724,377 tons; average price, $7.89; total value, $5,715,334.

Alfalfa.—Area, 154,880 acres; average yield, 4.4 tons; total yield, 688,047 tons; average price, $11.71; total value, $8,057,030.

TABULATED CROP SUMMARY

	Acres	Average Yield	Average Price	Total Yield	Total Value
Corn	9,818,500	35.3 bu.	$ .81	346,193,200	$ 280,416,500
Oats	4,979,800	37.0 bu.	.49	184,131,000	90,224,190
Spring wheat	142,990	13.4 bu.	1.54	1,927,280	2,968,011
Winter wheat	448,945	17.5 bu.	1.58	7,858,900	12,417,062
Barley	197,000	30.7 bu.	.90	6,039,930	5,435,937
Rye	55,745	22.8 bu.	1.15	1,270,590	1,461,178
Flax seed	5,445	10.3 bu.	2.06	56,045	115,390
Timothy seed	312,180	4.5 bu.	2.18	1,404,810	3,061,485
Clover seed	59,766	1.6 bu.	9.29	95,625	888,356
Potatoes	101,360	42.3 bu.	1.75	4,287,600	7,503,300
Hay (tame)	3,240,600	1.8 tons	9.00	5,929,720	53,367,480
Hay (wild)	517,497	1.4 tons	7.89	724,377	5,715,334
Alfalfa	154,880	4.4 tons	11.71	688,047	8,057,030
Pasturage and grazing				Estimated	96,000,000
Ensilage				Estimated	6,600,000
Sweet corn				Estimated	500,000
Pop corn				Estimated	234,420
Fruit crop				Estimated	7,500,000
Garden truck				Estimated	4,700,000
Miscellaneous				Estimated	10,000,000
Total					$597,165,673

The value of soil products for 1915 was $408,166,903

IOWA CROPS, 1916, NUMBER OF ACRES BY COUNTIES.

PART I.

Counties	Corn	Oats	Winter Wheat	Spring Wheat	Barley	Rye
Adair	101,000	[illegible]	6,700	750	1,100	280
Adams	72,000	18,300	12,400	80	200	100
Allamakee	47,000	45,000	800	900	5,100	500
Appanoose	47,000	13,200	6,400	70	------------	1,600
Audubon	[illegible]	38,500	2,500	2,100	6,200	20
Benton	136,500	76,700	200	480	6,200	550
Black Hawk	99,000	55,900	970	100	1,280	1,450
Boone	127,000	65,700	3,000	350	270	65
Bremer	64,000	52,900	350	200	1,000	900
Buchanan	100,000	56,000	300	210	640	800
Buena Vista	132,000	83,000	250	190	500	20
Butler	108,000	72,000	180	420	310	1,380
Calhoun	136,000	95,400	380	50	500	------------
Carroll	121,000	68,100	1,550	2,600	2,150	------------
Cass	107.000	35.600	22,000	2,200	2,960	220
Cedar	105,000	36,200	1,300	400	9,000	700
Cerro Gordo	98,000	76,000	150	360	1,300	120
Cherokee	127,000	75,000	70	170	1,400	50
Chickasaw	76,000	67,000	200	1,570	3,800	400
Clarke	58.000	16,500	6,500	50	------------	70
Clay	110,000	76,000	130	420	1,700	100
Clayton	76,000	61,000	1,300	600	8,000	1,600
Clinton	123,000	44,000	2,900	860	5,100	1,300
Crawford	[illegible]	66,000	1,900	5,800	3,800	50
Dallas	130,000	50,500	11,000	250	300	50
Davis	48,000	21,000	5,000	100	70	1,500
Decatur	66,000	18,000	10,000	30	------------	700
Deleware	91,000	51,200	150	200	4,200	2,300
Des Moines	71,000	28,000	6,600	350	200	3,000
Dickinson	53,000	38,000	100	600	1,000	------------
Dubuque	64,200	49,400	550	600	1,500	640
Emmet	[illegible]	53,000	------------	100	350	100
Fayette	[illegible]	64,000	400	900	2,600	950
Floyd	90,000	69,000	200	470	560	300
Franklin	115.000	82,000	150	300	500	120
Fremont	111,000	10,000	16,000	500	60	200
Greene	[illegible]	64.000	1,900	60	260	------------
Grundy	106,000	72,000	150	220	1,800	50
Guthrie	107,500	45,800	5,900	1,100	930	10
Hamilton	134,000	86.300	300	300	100	------------
Hancock	104.000	84,000	50	1,100	1,800	250
Hardin	106.000	69.000	250	460	500	------------
Harrison	153,000	22.800	15.500	10,500	1,400	250
Henry	68,000	26,500	4,700	100	80	2,000
Howard	59,300	53,400	220	730	3,750	370
Humboldt	92,000	60,000	300	600	700	50
Ida	95,500	51.000	350	620	2,500	------------
Iowa	101,000	36,400	2,000	650	800	460
Jackson	60,700	30.000	1,400	820	1,350	1,140
Jasper	145,000	53,400	8,000	2,400	150	170
Jefferson	56,000	25,000	5.000	700	400	500
Johnson	101.000	39.500	2,000	300	800	1,100
Jones	76,500	32,000	200	400	2,200	800
Keokuk	97,000	34,500	3,700	2,300	140	1,170
Kossuth	169,000	141,000	140	500	1,050	140
Lee	76.200	19.100	9,200	------------	340	6.500
Linn	114.000	52,000	550	540	770	1,070
Louisa	66 500	20,000	5,800	100	100	2,800
Lucas	43,600	16,800	6,000	100	------------	100
Lyon	129,700	97,000	90	1,500	5,300	50
Madison	87,000	25,500	9,500	430	750	70
Mahaska	105,000	37,000	5.900	1,400	250	440
Marion	[illegible]	27,000	14,000	1,300	300	120
Marshall	124,000	59,600	1,600	560	500	80
Mills	93,000	14.500	13,000	1,600	250	200
Mitchell	72,000	77,500	380	1,350	2,200	60
Monona	146,500	30.000	24,000	9,100	1,380	150
Monroe	43,700	12,500	6,600	500	50	270
Montgomery	87,000	18,000	16,000	2,500	300	140
Muscatine	72,600	20.700	3,500	500	4,900	3,100
O'Brien	132,000	80,000	------------	300	4,600	20
Osceola	84,000	65,000	------------	------------	2,700	50

IOWA CROPS, 1916, NUMBER OF ACRES BY COUNTIES.

PART I.

Couuties	Corn	Oats	Winter Wheat	Spring Wheat	Barley	Rye
Page	100,000	20,000	17.700	1,900	250	620
Palo Alto	98,000	77,000	------------	170	350	360
Plymouth	192,000	96,500	1,800	27,200	3,500	150
Pocahontas	130,000	89.300	100	80	200	240
Polk	100,000	39,000	19,000	1,700	50	100
Pottawattamie	201,000	43,000	25,000	4,800	6,000	300
Poweshiek	115,000	41,500	700	800	620	160
Ringgold	74,000	23,800	8,600	------------	50	300
Sac	123.000	75,000	220	100	3,100	------------
Scott	80,700	25,500	8,200	650	19,200	2,300
Shelby	122,800	48,200	2,000	3,300	7,000	130
Sioux	117,000	101,000	760	11,600	13,600	60
Story	144,000	69,500	1,400	180	60	80
Tama	127,000	65,500	750	1,900	5,300	140
Taylor	82,200	23,500	11,000	150	200	560
Union	68,500	22,300	5,200	100	50	200
Van Buren	50,800	17,500	5,500	100	20	1,900
Wapello	57,400	17,000	6,000	200	100	1,000
Warren	81,400	20,000	24,000	500	300	400
Washington	97,700	42,500	3,700	340	270	740
Wayne	67,600	25,600	7,300	100	70	420
Webster	144,000	110,000	725	1,200	350	30
Winnebago	64,500	50,000	80	3,800	2,100	70
Winneshiek	87,000	66,400	550	4,300	10,500	470
Woodbury	208,000	66,300	7,500	4,300	1,400	100
Worth	55,000	66,000	------------	2,000	2,400	100
Wright	119,500	77,500	400	550	800	------------
Totals	9,818,500	4,979,800	418,945	142,990	197,000	55,745

IOWA CROPS, 1916, NUMBER OF ACRES BY COUNTIES.

PART II.

Counties	Flax	Potatoes	Tame Hay	Wild Hay	Alfalfa	Pastures
Adair	------------	900	40,000	1,800	250	123,000
Adams	------------	380	26,100	850	800	102,700
Allamakee	5	970	49,000	940	100	174,500
Appanoose	------------	260	41,300	300	80	118,000
Audubon	------------	850	34,500	1,900	1,380	70,400
Benton	------------	1,650	51,400	2,300	130	113,000
Black Hawk	------------	1,280	32,800	7,300	190	87,000
Boone	------------	550	27,000	4,200	475	76,900
Bremer	------------	1,270	18,000	20,800	90	75,000
Buchanan	------------	1,100	37,500	10,200	60	102,800
Buena Vista	------------	1,100	25,000	9,500	120	72,000
Butler	------------	1,300	25,900	8,870	70	93,300
Calhoun	20	560	22.300	5,400	250	54,400
Carroll	------------	1,900	29,000	9,000	820	74,300
Cass	------------	1,080	36,300	980	1,130	102,300
Cedar	------------	920	50,000	180	120	103,600
Cerro Gordo	280	1,250	28,200	9,000	275	66,500
Cherokee	------------	1,200	28,000	8,600	1,250	77,000
Chickasaw	80	930	26,000	14,200	5	90,500
Clarke	------------	1,000	26,000	290	100	94,000
Clay	170	800	25,000	13,000	600	75,000
Clayton	------------	1,700	60,000	2,000	860	169,000
Clinton	------------	900	58,000	1,900	600	139,000
Crawford	------------	2,000	51,000	5,100	5,000	123,000
Dallas	------------	540	27,000	2,500	740	105,000
Davis	------------	370	42,000	4	130	136,000
Decatur	------------	140	36,700	130	260	134,000
Delaware	------------	1,100	45,500	5,500	90	119,000
Des Moines	------------	800	22,000	------------	750	91,000
Dickinson	300	1,350	13,000	12,000	120	41,500
Dubuque	------------	2,100	61,500	700	210	148,800
Emmet	270	540	16,000	9,000	70	46,500
Fayette	------------	1,500	55,000	9,400	100	154,000
Floyd	200	1,340	29,000	4,000	50	119,000
Franklin	50	1,380	32,000	9,400	110	86,500
Fremont	------------	500	11,400	2,300	10,700	64,000
Greene	------------	550	27,000	5,600	330	72,000
Grundy	------------	1,620	26,300	6,060	50	71,000
Guthrie	------------	600	34,100	3,600	330	101,000
Hamilton	------------	720	26,000	7,400	310	74,000
Hancock	130	890	23,000	14,500	130	76,000
Hardin	------------	920	28.000	6,600	150	76,000
Harrison	------------	950	12.200	7,400	17,000	94,700
Henry	------------	340	28,000	------------	290	96,500
Howard	200	1,000	30,200	9,500	40	83,800
Humboldt	50	450	19,000	6,800	300	44,000
Ida	------------	700	26,600	1,950	1,500	63,400
Iowa	------------	1,220	38,900	350	140	101,000
Jackson	------------	1,000	59,000	800	180	177,000
Jasper	------------	950	49,000	570	280	146,000
Jefferson	------------	700	35,000	------------	50	93,000
Johnson	------------	1,100	50,000	450	370	121,000
Jones	------------	850	50,500	190	150	131,700
Keokuk	------------	580	43,400	40	200	122,000
Kossuth	460	1.500	32,500	35,000	340	110,500
Lee	------------	1,160	32,200	20	550	133.500
Linn	------------	1,600	53.500	2,400	200	129,500
Louisa	------------	420	18,700	160	300	67,500
Lucas	------------	180	31,700	75	60	101,000
Lyon	------------	2,100	16,000	9,400	2.400	65,500
Madison	------------	1,100	32.000	850	270	139,000
Mahaska	------------	500	38,000	230	430	112,000
Marion	------------	860	33,200	240	650	121,500
Marshall	------------	1,250	39,000	350	170	84.000
Mills	------------	600	12,800	3,500	11,600	61,500
Mitchell	500	2,700	26 000	2,600	70	66,000
Monona	------------	930	11,400	11,600	12,500	96,700
Monroe	------------	130	40,000	------------	80	104,000
Montgomery	------------	880	28,000	600	4.400	77,500
Muscatine	------------	1,800	25,400	650	2,500	82,000
O'Brien	50	1,450	26,500	7,200	1,000	71,000
Osceola	160	1,000	15,700	7,200	180	43,500

IOWA CROPS, 1916, NUMBER OF ACRES BY COUNTIES.

PART II.

Counties	Flax	Potatoes	Tame Hay	Wild Hay	Alfalfa	Pastures
Page	------------	700	36,600	1,100	3,500	100,500
Palo Alto	620	780	17,500	23.200	240	70,200
Plymouth	50	1,760	25,200	20,800	10,300	107,800
Pocahontas	80	900	18,500	11,700	260	63,500
Polk	------------	1,600	26,000	2,300	900	74,000
Pottawattamie	------------	2,100	38,500	8,100	20,000	189,000
Poweshiek	------------	940	43,200	160	230	113,900
Ringgold	------------	200	42,000	90	190	117,700
Sac	40	900	31,000	5,500	700	74,000
Scott	------------	3,500	34,700	1,840	1,220	79,000
Shelby	------------	1,800	40,200	4,200	3,900	92,400
Sioux	------------	2,200	21,300	15,200	4,600	76,700
Story	------------	260	30,500	3,600	520	67,000
Tama	------------	1,370	55,000	1,000	250	135,000
Taylor	------------	570	34,000	440	700	119,000
Union	------------	700	24,800	580	200	98,000
Van Buren	------------	190	36,000	20	600	124,300
Wapello	------------	580	30,000	200	260	96,000
Warren	------------	400	36,900	380	280	129,000
Washington	------------	680	41,200	8	140	120,700
Wayne	------------	200	47,000	50	170	116,000
Webster	140	730	26,000	1,500	450	83,000
Winnebago	380	1,000	16,800	21,700	90	55,800
Winneshiek	190	1,200	51,600	4,600	100	146,000
Woodbury	------------	1,700	27,200	9,500	17,200	109,600
Worth	950	800	22,000	15,300	100	58,300
Wright	70	600	26,500	7,000	200	68,000
Total	5,445	101,390	3,240,600	507,497	154,885	9,717,200

TABULATED CROP SUMMARY FOR THE YEAR 1916.

PART I.

Counties	Corn		Oats		Spring Wheat		Winter Wheat		Barley	
	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels
Adair	30	3,630,000	32	960,000	14	10,500	21	140,700	31	34,000
Adams	35	2,520,000	23	604,000	15	1,200	17	211,000	30	6.000
Allamakee	37	1,739,000	40	1,800,000	17	15,300	26	21,000	33	168,300
Appanoose	25	1,175,000	26	474,000	12	800	13	83,000	----	----------
Audubon	38	3,420,000	35	1,348,000	13	27,300	20	50,000	33	204,600
Benton	33	4,565,000	42	3,221,000	18	8,700	20	4,000	35	217,000
Black Hawk	36	3,564,000	38	2,090,000	16	1,600	18	17,500	28	35,800
Boone	32	4,061,000	39	2,562,000	13	4,500	19	57.000	36	9,700
Bremer	30	1,920,000	36	1,905,000	15	3,000	16	5,600	28	28.000
Buchanan	27	2,700,000	36	2,016,000	19	3,400	22	6,600	35	22,400
Buena Vista	37	4,884,000	42	3,486,000	18	3,500	20	5,000	30	15,000
Butler	32	3,456,000	32	2,304,000	12	5,000	13	2,300	24	7,400
Calhoun	36	4,896,000	41	3,911,400	15	750	20	7,600	32	16,000
Carroll	33	4,719,000	26	2,451,600	14	36,400	19	29,500	34	73,100
Cass	35	4,066,000	32	1,139,200	12	26,400	16	342,000	27	80,000
Cedar	28	3,990,000	44	1,592,800	12	4,800	18	23,400	35	315.000
Cerro Gordo	33	3,234,000	35	2,760,000	12	4,300	14	2,100	22	28,600
Cherokee	41	5,207,000	47	3,525,000	17	2,900	20	1,400	32	45,000
Chickasaw	29	2,030,000	30	2,010,000	8	12,600	6	1,200	25	95,000
Clarke	28	1,624,000	32	528,000	14	700	15	97,500	15	3.000
Clay	41	4,510,000	40	3.040,000	18	7,600	15	2,000	28	47,600
Clayton	34	2,584,000	37	2,257,000	17	10,200	22	28,600	34	272.000
Clinton	35	4,305,000	39	1,716,000	18	15,500	23	66,700	29	147,900
Crawford	46	6,900,000	34	2,244,000	12	69,600	22	41,800	32	121,600
Dallas	36	4,680,000	41	2,070,500	13	3,300	17	187,000	33	9.900
Davis	27	1,296,000	22	462,000	10	1,000	11	55,000	15	1,100
Decatur	26	1,716,000	27	486,000	11	330	14	140,000	--	----------
Delaware	28	2,548,000	30	1,536,000	18	3,600	21	3,200	27	113.400
Des Moines	28	1,988,000	30	840,000	10	3,500	16	105,600	35	7,000
Dickinson	37	1,961,000	40	1,520,000	16	9,600	14	1,400	24	24,000
Dubuque	34	2,183,000	38	1,877,200	20	12,000	22	12,100	35	52.500
Emmet	37	2,590,000	41	2,173,000	12	1,200	----	----------	33	11,600
Fayette	33	2,970,000	37	2,368,000	16	14,400	12	4,800	28	72,800
Floyd	29	2,610,000	30	2,070.000	13	6,100	19	3.800	27	15,100
Franklin	37	4.255,000	42	3,444,000	13	3,900	18	2.700	29	14.500
Fremont	39	4,329.000	30	300.000	10	5,000	19	304.000	28	1.700
Greene	33	4.389.000	38	2.432.000	17	1,000	18	34,200	30	7.800
Grundy	37	3,922.000	35	2,520,000	13	2.900	16	2,400	30	54,000
Guthrie	34	3.655,000	35	1,603,000	11	12.100	13	76,700	23	21.400
Hamilton	33	4,422,000	39	3,365.700	14	4,200	16	4,800	28	2.800
Hancock	36	3,744.000	34	2.856.000	16	17,600	16	800	27	48,600
Hardin	38	4,028,000	39	2,691,000	13	6,000	18	4,500	31	15,500
Harrison	36	5,508,000	34	776,000	11	115,500	18	279,000	32	44.800
Henry	33	2,244,000	31	821,500	14	1,400	17	80,000	22	1,760
Howard	23	1,363.900	25	1,335,000	9	6,600	13	2.900	19	71,200
Humboldt	38	3,496.000	37	2,220,000	13	7.800	18	5,400	23	23,100
Ida	34	3.247,000	33	1,938,000	15	9,300	20	7.000	32	80,000
Iowa	21	3,131,000	35	1,274,000	15	1,000	23	46,000	32	25,600
Jackson	37	2,245,900	32	960.000	20	16,400	20	28,000	32	43,200
Jasper	39	5,655,000	33	1,762.000	13	31,200	19	152.000	30	4.500
Jefferson	34	1,904.000	24	600,000	12	8.400	12	75.000	30	12,000
Johnson	28	3,838.000	38	1,501,000	17	5,100	23	46.000	30	24.000
Jones	30	2,295,000	42	1,344,000	18	7.200	20	4,000	28	61.600
Keokuk	33	3,201.000	35	1,207,500	12	27,600	18	66.600	32	4,500
Kossuth	37	6.253,000	44	6.204.000	14	7,000	20	2.800	34	35.700
Lee	26	1,461,200	23	439,300	12	1,000	14	128,800	26	8,800
Linn	37	4.218.000	39	2,028.000	20	10,800	17	9.400	29	22,300
Louisa	38	2,527.000	31	620,000	15	1,500	15	87,000	25	2.500
Lucas	29	1,264,400	29	487.200	14	1,400	15	90,000	----	----------
Lyon	36	4,662,000	40	3.880.000	10	15,000	26	2,300	28	148.400
Madison	36	3,132.000	33	841.500	15	6.400	16	152,000	25	18,700
Mahaska	35	3.675.000	31	1,147,000	13	76,700	20	118,000	20	5.000
Marion	38	3.260,400	34	918.000	12	15,600	17	238.000	25	7,500
Marshall	45	5.580,000	41	2,419,000	15	8,400	18	28,800	38	19.000

TABULATED CROP SUMMARY FOR THE YEAR 1916.

PART I.

Counties	Corn		Oats		Spring Wheat		Winter Wheat		Barley	
	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Total Bushels	Bushels per acre	Totat Bushels	Bushels per acre	Total Bushels
Mills	37	3,441,000	34	493,000	11	17,600	18	234,000	32	8,000
Mitchell	34	2,418,000	36	2,880,000	16	21,600	12	4,000	27	59,400
Monona	23	4,834,500	33	990.000	13	118,300	18	432,000	32	44,200
Monroe	22	957,000	24	290,000	12	6,000	15	99,000	15	770
Montgomery	39	3,393,000	37	676,000	10	25,000	19	204.000	35	10,700
Muscatine	39	2,831,000	45	931,000	18	9,000	18	63,000	32	156,800
O'Brien	43	5,676.000	41	3,280,000	20	6,000	----	----------	51	142,600
Osceola	36	3,024,000	35	2,275,000	----	----------	----	----------	25	67,500
Page	28	3.800,000	31	620,000	11	20,900	19	336,300	21	5,250
Palo Alto	37	[illegible]	39	[illegible]	14	2,400	----	----------	29	10,200
Plymouth	29	7,488,000	25	3,377,500	13	353,600	20	36,000	30	105,000
Pocahontas	31	[illegible]	38	3.393,400	16	1.300	18	1.800	25	5,400
Polk	40	4,000,000	41	1,599,000	11	18.700	17	223.000	26	1,300
Pottawattamie	38	6,632,000	34	1,462,000	14	67.200	17	425.000	30	180,000
Poweshiek	35	4,025,000	40	1,660,000	15	12,000	22	15,400	42	26,000
Ringgold	28	2,072,000	30	714,000	14	700	15	129.000	22	1,100
Sac	38	4,674,000	39	2,925,000	13	1.300	25	5.500	31	96,100
Scott	40	3,228.000	51	1,300.500	18	11.700	25	205.000	[illegible]	576,000
Shelby	46	5,648,800	32	1,542,000	13	42,900	18	36.000	[illegible]	259,000
Sioux	46	5,382,000	46	4.646,000	13	150.800	15	11.400	[illegible]	462,400
Story	37	5,328,000	41	2,849,500	18	3,200	24	33.600	25	1,500
Tama	34	4,318.000	43	2.816,500	18	34.200	23	17.200	[illegible]	143,100
Taylor	33	2,712,600	36	846,000	15	2,200	18	198,000	20	6,000
Union	32	2,192,000	31	758,200	15	1,500	17	369.200	26	1,300
Van Buren	28	1,422.400	24	420,000	8	800	14	77,000	24	480
Wapello	27	1,549,800	28	476,000	15	3,000	16	96,000	[illegible]	2,000
Warren	[illegible]	2,604,800	31	620.000	14	7,000	20	480,000	[illegible]	6,600
Washington	35	3,419,500	30	1,275,000	18	6,100	15	55,500	[illegible]	5,400
Wayne	25	1,690,000	27	691.000	10	1.000	10	73.000	[illegible]	1,190
Webster	33	4,752,000	39	4,290,000	18	21,600	19	13.700	28	9,800
Winnebago	37	2,386,500	39	1,950,000	10	38,000	14	1,100	[illegible]	63.000
Winneshiek	32	2,784,000	38	2,523,200	16	68,800	19	10.500	[illegible]	315.000
Woodbury	35	7,280,000	41	2,718,300	12	51,600	17	127,500	35	49,000
Worth	34	1,870,000	30	1,980,000	14	28.000	----	----------	26	62,400
Wright	35	4,182,500	33	2,557,500	14	7,700	15	6,000	34	27,200
Total	35.3	346,193,200	37.0	184,131,000	13.4	1,927,280	17.5	7,858,900	30.7	6,039,930

TABULATED CROP SUMMARY FOR THE YEAR 1916.

PART II.

Counties	Rye		Flax Seed		Potatoes		Hay—Tame		Hay—Wild		Alfalfa	
	Bushels per acre	Total Bushels	Bushels per acre	Total bu.	Bushels per acre	Total Bushels	Tons per acre	Total Tons	Tons per acre	Total Tons	Tons per acre	Total Tons
Adair	15	4.000	----	--------	38	34,200	1.6	64,000	1.7	31,000	4.0	1,000
Adams	24	2,400	----	--------	30	11,500	1.9	50,000	1.8	1,500	2.6	2,100
Allamakee	16	8,000	11	55	37	36,000	2.0	98,000	1.2	1,100	3.0	300
Appanoose	15	24,000	----	--------	42	11.000	1.5	62,000	1.0	300	2.6	200
Audubon	17	300	----	--------	67	57,000	1.5	52,000	1.3	2,500	3.5	48,300
Benton	19	10,500	----	--------	34	56.000	1.9	98,000	1.8	41,000	4.0	500
Black Hawk	15	21.800	----	--------	15	19,200	1.6	52,500	1.2	8,800	3.8	7.200
Boone	23	1,500	----	--------	55	30.200	1.5	40,500	1.2	5,000	2.2	10,500
Bremer	19	17,100	----	--------	35	44.500	1.9	34,200	1.2	25,000	2.5	225
Buchanan	18	14,400	----	--------	58	26.000	1.6	60,000	1.6	16,300	3.0	1,800
Buena Vista	20	400	----	--------	45	49.500	1.6	40,000	1.6	15,200	3.5	4,200
Butler	15	20,700	14	700	31	40.200	1.7	44,000	1.2	10,700	2.0	140
Calhoun	----	----------	12	240	27	15,100	1.9	42,400	1.1	5,900	3.5	8,800
Carroll	----	----------	----	--------	40	76.000	1.4	40,600	1.5	13,500	3.6	3,000
Cass	20	4.400	----	--------	38	41.000	1.4	50,800	1.0	1,000	4.0	4,500
Cedar	20	14,000	----	--------	27	34.000	1.8	90,000	1.5	270	3.0	360
Cerro Gordo	18	2,200	7	2,000	48	60.000	1.6	45,000	1.1	9,900	2.8	7,700
Cherokee	16	800	----	--------	45	54,000	2.1	58,800	1.7	14,700	3.8	4,700
Chickasaw	15	6.000	10	800	20	18,600	1.5	39,000	1.1	15,600	4.0	20
Clarke	15	1,000	----	--------	45	45.000	1.5	29,000	1.0	300	2.6	260
Clay	20	2,000	10	1,700	16	12,800	1.5	37,500	1.4	18,200	3.5	2,100
Clayton	16	25,600	----	--------	41	69.700	1.8	108.000	1.4	2,800	2.7	2,300
Clinton	19	24,700	----	--------	28	23,200	1.7	98.000	1.1	2,100	3.0	1,800
Crawford	20	1,000	----	--------	53	106.000	2.0	108,000	1.2	6,100	4.5	22,500
Dallas	17	850	----	--------	48	11.800	1.4	37,800	1.1	2,700	3.5	2,600
Davis	10	15,000	----	--------	32	11.800	1.6	67,200	1.0	5	1.8	230
Decatur	13	9.100	----	--------	43	4.300	1.3	47,500	2.0	260	2.4	620
Delaware	17	39.100	----	--------	10	11.000	1.6	72.800	1.7	9,400	3.0	270
Des Moines	18	51,000	----	--------	75	60.000	1.4	30,800	----	--------	2.0	1,500
Dickinson	20	1,000	11	3.300	26	35.300	1.8	23,400	1.3	15,600	5.0	600
Dubuque	19	12.200	----	--------	28	58.800	1.6	98,400	1.0	700	3.5	735
Emmet	19	1,900	10	2,700	38	20,500	1.6	25,600	1.2	10,800	2.5	175
Fayette	18	17,100	----	--------	39	58.500	1.5	82,500	1.1	10,300	2.8	280
Floyd	15	4.500	6	1,200	36	48.000	1.8	52,200	1.2	4,800	2.7	137
Franklin	17	2.000	8	400	38	52,400	1.6	51.200	1.2	11,300	2.6	300
Fremont	15	3.000	----	--------	67	33,500	1.8	20,520	1.5	3,400	3.3	35,300
Greene	20	1,000	----	--------	50	27.500	1.2	32.400	0.9	5,000	1.5	500
Grundy	17	850	----	--------	40	64.800	1.8	47,300	1.5	9.000	2.5	125
Guthrie	16	160	----	--------	31	18.600	1.8	61,400	1.6	5,800	3.0	1.090
Hamilton	20	300	----	--------	44	31.700	1.7	44.200	1.2	8,900	4.0	1,240
Hancock	15	3,800	12	1.600	51	45.400	1.5	34,500	1.1	16,000	3.0	390
Hardin	----	----------	----	--------	42	38.600	1.5	42,000	1.0	6.600	2.8	420
Harrison	25	6.300	----	--------	46	43.700	1.7	20,700	1.8	13,300	3.4	57,800
Henry	15	30.000	----	--------	69	23.500	1.8	54.000	----	--------	3.5	9,200
Howard	20	7.400	9	1,800	26	26.000	1.3	39,300	0.9	8,500	3.0	120
Humboldt	20	1 000	9	450	29	13.000	1.2	22.800	1.0	6.800	2.8	840
Ida	15	300	----	--------	65	45.500	1.9	50,500	1.5	2,800	4.0	6,000
Iowa	15	700	----	--------	37	45,100	1.8	70,000	1.5	520	3.8	530
Jackson	22	25,000	----	--------	37	37.000	1.8	106.200	1.5	1,200	3.3	600
Jasper	15	2.500	----	--------	49	46.500	2.1	102,900	1.5	900	6.0	1.700
Jefferson	15	7,500	----	--------	66	46.200	1.5	52.500	----	--------	5.0	250
Johnson	18	19.800	----	--------	63	69.300	1.6	80.000	1.4	630	4.0	1,480
Jones	15	12.000	----	--------	50	42,500	2.1	106,000	1.5	300	3.0	450
Keokuk	18	21,000	----	--------	38	22.000	1.7	73,800	1.5	60	3.8	760
Kossuth	19	270	11	5,100	24	36.000	1.6	52,000	1.2	42,000	2.6	8,800
Lee	17	110.500	----	--------	51	59.200	1.6	51,500	1.5	30	3.2	17.600
Linn	19	20,300	----	--------	40	64.000	1.6	85,600	1.5	3,600	2.9	5,800
Louisa	17	47,600	----	--------	45	18.900	1.8	33.700	1.2	200	3.0	900
Lucas	13	1,300	----	--------	45	8,100	1.6	50.700	1.0	75	2.8	170
Lyon	16	800	----	--------	44	92.400	1.9	17,900	1.6	15,000	3.2	7,700
Madison	18	1,300	----	--------	35	38,500	1.4	44,800	1.3	1,100	3.0	800
Mahaska	16	7,000	----	--------	44	26,000	1.6	61,300	1.4	300	3.5	1.500
Marion	20	2,400	----	--------	31	26.700	1.7	56.400	1.5	360	2.6	1,700
Marshall	22	1,800	----	--------	51	63.800	1.9	74,100	1.0	350	3.2	550
Mills	18	3,600	----	--------	60	36.000	1.7	21,800	1.5	5.200	3.2	37,100

TABULATED CROP SUMMARY FOR THE YEAR 1916.

PART II.

Counties	Rye		Flax Seed		Potatoes		Hay—Tame		Hay—Wild		Alfalfa	
	Bushels per acre	Total Bushels	Bushels per acre	Total Bush'ls	Bushels per acre	Total Bushels	Tons per acre	Total Tons	Tons per acre	Total Tons	Tons per acre	Total Tons
Mitchell	20	1,200	11	5,500	44	118,800	2.0	52,000	1.5	3,900	2.7	190
Monona	18	2,700	----	--------	46	42,800	1.9	21,700	1.6	18,600	3.8	47,500
Monroe	12	3,200	----	--------	63	8,200	1.4	56,000	----	--------	3.0	240
Montgomery	15	2.100	----	--------	61	53.700	1.6	44.800	1.5	900	3.4	15.000
Muscatine	20	62.000	----	--------	38	68.400	1.4	35,600	1.0	650	3.5	8,800
O'Brien	19	380	12	600	41	59.400	2.2	583.000	1.7	12.200	3.8	3.800
Osceola	18	900	7	1.150	62	62.000	1.7	26,700	1.5	10,800	3.0	540
Page	20	12,400	----	--------	74	51.800	1.9	69,500	2.0	2.200	3.3	11.600
Palo Alto	20	7,200	10	6,200	38	29.600	1.2	21.000	1.1	25.500	3.0	720
Plymouth	18	12.200	12	600	45	79.200	1.5	37,800	1.2	25,000	3.5	36,000
Pocahontas	27	6,500	9	720	25	22.500	1.5	27.800	1.2	14.000	2.5	650
Polk	18	1,800	----	--------	39	62.400	1.7	44.200	1.0	2.300	3.8	3.400
Pottawattamie	22	6.600	----	--------	59	123.900	1.5	57.800	1.3	10.500	3.4	68.000
Poweshiek	15	2.400	----	--------	25	23.500	2.0	86,400	1.7	270	2.8	650
Ringgold	15	4,500	----	--------	51	10.200	1.6	67.200	1.0	100	3.5	6,700
Sac	----	----------	10	400	35	31.500	1.6	49,600	1.2	6.600	4.0	2.800
Scott	18	41,400	----	--------	51	178.500	1.6	55,500	1.0	1,800	4.2	51.200
Shelby	30	3,900	----	--------	41	73.800	1.2	48,200	1.5	6.300	2.3	8,000
Sioux	18	1,080	----	--------	49	107.800	1.8	38,300	1.5	22,800	2.8	12,900
Story	18	1.400	----	--------	79	20.500	1.6	48,800	1.2	4.300	5.0	2,600
Tama	22	3,100	----	--------	24	32.900	2.0	110,000	1.5	1,500	3.4	850
Taylor	22	12,300	----	--------	81	44.500	1.8	61,200	1.0	440	2.0	1,400
Union	18	3.600	----	--------	50	35.000	1.8	44,600	1.5	870	3.0	600
Van Buren	13	24,700	----	--------	29	5.500	1.5	54.000	1.0	20	2.5	1.500
Wapello	13	13,000	----	--------	65	37.700	1.4	42,000	1.0	200	6.0	1,500
Warren	19	7.600	----	--------	41	20.000	1.5	54,000	1.0	380	2.8	800
Washington	16	11,800	----	--------	40	27,200	1.5	61,800	1.5	12	2.4	340
Wayne	12	5,000	----	--------	59	11.800	1.6	75,200	1.5	75	2.5	420
Webster	18	540	12	1,700	35	25.500	1.9	49,400	1.6	2,400	2.5	1,100
Winnebago	16	1.120	13	5.000	50	50,000	1.6	26,900	1.3	28.200	2.6	230
Winneshiek	17	8.000	10	1,900	34	44.200	2.0	103.200	1.5	6.900	3.0	300
Woodbury	18	1,800	----	--------	50	85,000	1.7	46,200	1.2	11,400	3.1	53.300
Worth	8	800	10	9.500	45	36.000	1.7	37,400	1.5	23.000	3.0	300
Wright	17	340	10	700	31	18,600	1.6	42,400	1.1	7,700	4.2	840
Total	22.8	1,270,590	10.3	56,015	42.3	4,287.600	1.8	5,929,720	1.4	724,377	4.4	658,047

FUNGUS DISEASES OF PLANTS FOR 1916

BY L. H. PAMMEL

The past year has been, on the whole, a good one for crops, as shown by the crop report of Dr. Chappel. The tables and charts showing temperature and precipitation at Ames and for the state, which have been compiled for me from the reports of the Iowa Weather and Crop Service, by Miss Charlotte M. King, show that there were deficiencies in precipitation at Ames in all months, March to September, inclusive, the greatest deficiencies occurring in March, 1.17 inches; June, 1.69 inches; and July 3.54 inches. These data are graphically represented by the tables and charts accompanying this article.

Dr. George M. Chappel gives the following yields; corn, 346,193,200 bushels, having a value of $280,416,500. The loss from corn smut at 6 per cent would mean a loss of $18,000,000 in round numbers. The oat crop amounted to 184,131,000 bushels with a value of $90,224,100. The loss from both kinds of oat smut is about 7 per cent. This would mean a loss of about $6,300,000. Corn ear rots cause a loss of about 2 per cent, which would mean a loss of $5,600,000. Crown gall has been estimated to have damaged nursery stock about $45,000 annually. The loss from apple scab is nearly $2,500,000. The alfalfa spot disease has damaged the crop in Iowa about $1,000,000. A conservative estimate places the damage to crops of all kinds from fungus diseases in Iowa not far from $35,000,000. The damage to our crops is in a large measure controlled by weather conditions. Much of the injury to our crops can be prevented by treatment with fungicides and crop rotation.

We may briefly summarize the disease as follows: During the year 1915 there was an abundance of the potato blight fungus (Phytophthora infestans) which was, undoubtedly, due to the great precipitation and the unusually low temperature. The disease appearing from early August to the middle of the month. The year 1916 was on the whole characterized with high temperature, low humidity and small precipitation. This period of drought began in the month of June and continued to September. The potato blight fungus (Phytophthora infestans) did not occur in the state this season.

Leaf rust of oats *(Puccinia coronata)* was not severe. It made its first appearance early in June. The dry weather checked its development. The crop was good and the quality of the grain excellent. Stem rust of oats *(Puccinia graminis)* occurred to some extent, but not serious.

Stem rust of wheat (*Puccinia graminis*) was not common and little damage was done.

Leaf rust of rye *(Puccinia rubigo-vera)*. The leaf rust on rye was common and did some damage. In black soil it was much more common than in sandy soil. The damage was not as great as in 1915. It was common on rye.

Corn rust *(Puccinia sorghi)*. This rust, though common on leaves of corn, injured the corn somewhat. The uredo stage occurs toward the latter part of July and early August. The aecidium stage was not observed. The disease is wide-spread in Iowa and is more injurious to sweet corn than field corn.

Clover rust (*Uromyces Trifolii*) was not common and only occurred on second crop clover late in the season.

Alfalfa rust *(Uromuces Trifolii)* was not common.

Asparagus rust *(Puccinia asparagi)* was widely distributed, though not as common as the year previous.

Apple rust (*Gymnosporangium macropus*), though widely distributed, was not severe as the previous season because the infection period for the red cedar was shortened.

Two important rusts must be reported this year: the hollyhock rust *(Puccinia malvacearum)*, reported for the first time by a correspondent in Tama county. The writer has looked for it for some years in Iowa, but without finding it. It is said to occur in Wisconsin.

Snap dragon rust was reported from Scott county.

Another rust *(Uredo Campanulae)* was reported from Bagley also for the first time.

Timothy rust *(Puccinia Phlei-pratensis)* was not common.

Wheat blight *(Fusarium culmorum)* was not common.

Sorghum blight *(Bacillus Sorghi)* was fairly common.

Oats smut (*Ustilago avenae and U. laevis*). These smuts were fairly abundant and damaged the oat crop to a considerable extent. The loss to the crop has been estimated at $6,300,000. Farmers do not distinguish between the two species. The loose smut (*U. avenae*) was somewhat more abundant than the covered smut *(U. laevis)*. Loose Smut of Wheat was common and injurious.

Bunt (*Tilletia foetens*) was not common; found only in Davis County. It probably occurred in other wheat sections of Iowa.

Rye smut (*Urocystis occulta*). Rye is not grown extensively in Iowa. Chiefly in the sandy region of eastern Iowa. This smut was not uncommon in Davis County.

Corn smut (*Ustilago zeae*) found everywhere in Iowa. The amount of injury to the crop varies in different localities. The damage to the crop varies greatly. In some fields as much as 10 to 15 per cent of the corn stalks show corn smut. On such stalks the ears are generally smaller and in some cases the stalks are barren. Only about 1 per cent of the ears show corn smut.

The two barley smuts, the naked (*Ustilago nuda*) did an estimated damage of 3 per cent, and the covered smut *(U. hordei)* 2 per cent. Few of the farmers of the state treated their seed. This is in strong contrast to the custom of the onion growers of Scott County who treat their seed regularly with formalin by the drip method so that little of the onion smut (*Urocystis cepulae*) was reported.

Smut on poppy (*Entyloma papaveris*). A number of years ago, about 1910, the writer observed in a flower garden in La Crosse, Wisconsin, an abundance of *Entyloma* on the cultivated European poppy. This year it was found abundantly after a rain on the same species of poppy in Steamboat Rock, Hardin County. The majority of the leaves on a small patch were infected.

Cabbage yellows (*Fusarium gentiannus*). Cabbage yellow, for a number of years has been noted as a destructive disease in the cabbage district of Muscatine. Dr. I. E. Melhus reports the loss as serious.

Black rot of cabbage (*Pseudomonas campestris*) was not common.

Clover anthracnose (*Gloeosporium trifolii*). This disease attacks the peduncle of the clover; causes the stem near head to break so that no seed is produced. This disease was common in many parts of Iowa. This disease was first reported in June in Iowa by Dr. I. E. Melhus, the first time it has been reported in the state. It was also common in Illinois where Mr. Mosher found it, specimens of diseased plants having been forwarded to me and identified by Dr. Melhus.

Alfalfa leaf spot (*Pseudopeziza Medicaginis*) was fairly abundant in May. The dry weather of June seems to have checked the disease somewhat. It did some damage later in the season though not as severe as in 1915.

The violet root fungus (*Rhizoctonia medicaginus*) continues to spread slowly in Scott County.

Crown gall (*Bacterium tumefaciens*) seems to be on the increase in Iowa.

The Illinois Canker or Blister Canker (*Nummularia discreta*) is increasing in Western Iowa and spreading northward. It has been reported from Floyd, Wright and Scott counties by Dr. Melhus.

Apple blight (*Bacillus amylovorus*) was not abundant this year. Some trees were blighted early in June; then the disease was checked when the dry period of June started.

Apple scab (*Fusicladium dendriticum*) was widely distributed in Iowa. The leaves were not so seriously diseased as in 1915. There was however, considerable fruit diseased. Professor Laurenz Green, who has been conducting some co-operative spraying experiments, reports that unsprayed fruits of Northwestern Greening in Webster County had one per cent of clean apples. The untreated apples in the Bagley experiments had 10-15 per cent clean.

Yellow leaf disease of barley (*Helmintosporium graminum*) was abundant in places where barley is grown. It is an abundant crop in northeastern Iowa. The earliest report of the disease was June 21st and the damage reported was 5 per cent. The spot disease of barley (*H. sativum*) also on barley occurring on the leaves was less destructive. About three per cent damage is reported.

Ergot (*Claviceps purpurea*) was common on rye, also abundant on wild rye and quack grass.

The spot disease of cherry (*Cylindrosporium padi*) though occurring in nurseries was not as severe as in 1915. Very few of the leaves of orchard trees dropped.

The cherry mildew (*Phodosphaera Oxyacanthae*) was common though less injurious than the season previous. The same may be said for the lilac mildew (*Microsphacra alni*). It is interesting to note that this fungus seldom occurs on the Persian lilac.

The rose mildew (*Sphaerotheca pannosa*) was common only on Crimson Rambler. Very little of the gooseberry mildew was observed.

The corn disease (*Fusarium moniliforme*). From one to two per cent of the ears of corn were affected by the fungus. It was observed in a few cases on the roots. However, none of the plants were broken as was previously observed. It is probable that different seasons influence the development of this facultative parasite. Attention should be called to an oversight in our paper on Fusarium on corn to which Dr. C. W. Carpenter has called my attention. Professor Sheldon describes this species in the Report of the Nebraska Experiment Station for 1904 with figures showing the moniliform microconidia.

Cucumber wilt (*Bacillus tracheiphilus*) appeared in a cucumber patch in Ames in 1916. It was observed in a commercial greenhouse in Council Bluffs in 1915. It was also observed this year in Muscatine by Dr. I. E. Melhus.

Lettuce mildew (*Bremia lactucae*) was abundant in commercial greenhouses in Nevada and Des Moines, according to Dr. I. E. Melhus. It was not observed on lettuce in the garden.

Downy mildew (*Sclerospora graminicola*) was found in a few places on nearly mature plants. Not as abundant as in 1915.

Blister fungus of the White pine did not occur either on cultivated or mature white pine on the currant in Ames or in any other part of the state.

Rust of gooseberries (*Aecidium grossulariae*) was abundant on wild species of gooseberries in the vicinity of sedges (*Carex*).

Downy mildew of the grape (*Plasmopara Viticola*) was widely scattered but not abundant. The powdery mildew (*Uncinula necator*) was also widely scattered, but not serious. Of the diseases on forest trees the leaf spot of the Ohio Buckeye, *Phyllosticta Pariae*, was observed in Boone and Story counties, though not as abundant as in 1915. The oak blight, *Glocosporium*, was not common. In 1915 it was severe on the white oak. The sycamore blight was not common. The black walnut blight (*Marsonia juglandis*) which frequently causes the leaves to fall during the late summer was not uncommon this year but did not cause the early defoliation of the tree, as in some years.

The spot on hickory was fairly common.

The black knot of the plum (*Plowrightia morbosa*) not observed on the cultivated American plum, though occasionally on the wild plum of the same species. It was more frequent on the choke cherry. It is common on plants around the lakes of northern Iowa.

Enlarged plum (*Exoascus communis*) was noticed in a few cases on the Miner plum. The plum pocket (*E. pruni*) was reported from Hancock county on the cultivated plum by Dr. Melhus.

Cottonwood rust (*Melampsora tremulae*) was widely scattered and common only in the autumn.

The absence of Phytopthora has been noted. Dr. Melhus reports the following diseases to me: Jelly end rot (*Fusarium radicicola*) which he observed in three counties; Early Blight (*Alternaria solani*) also in a number of counties; Blackleg (*Bacillus Phytopthorus*) in Story and Scott counties. Potato scab was widely scattered.

Melon anthracnose (*Colletotrichum lagenarium*) was widely scattered but not common.

The spot on tomato (*Septoria Lycopersici*) so common in 1915, was not observed to any extent this year. Dr. Melhus reports tomato mosaic from Scott county, the first time it was observed in the state.

The strawberry leaf spot (*Microsphaerella Fragariae*) was fairly common in old strawberry beds.

FUNGICIDES.

In view of the widespread damage resulting from the various diseases of our cultivated plants, it was thought to be appropriate to append here a brief note relative to means of combatting these diseases. The common fungicides are as follows:

1. Bordeaux Mixture, one of the standard formulas for which is: copper sulphate, four pounds; quick lime, four pounds; water, fifty gallons.

2. Formaldehyde is a forty per cent solution is a general fungicide for treating oat smut and onion smut. In the case of onion smut the drip method is used and the usual formula is one pint to every twenty-five to thirty-three gallons of water.

There are several combinations of Bordeaux Mixture and formalin. In some cases insecticides are added to destroy the insects. The best treatment for oat smut is the formalin method. Lime sulphur is also used to a considerable extent. The different methods of treatment are set forth in a number of publications from among which the following are recommended:

Shelby, A. D.: A Brief Handbook of the Diseases of Cultivated Plants. Bulletin of the Ohio Experiment Station, No. 214, pp. 355-360.

Beach, S. A.: Spraying Practice for Orchard and Garden. Bulletin of the Iowa Experiment Station, No. 127, pp. 73-77.

WEATHER DATA, SHOWING SEASON, 1916—AMES, IOWA.

Date	April			May			June			July			August			September		
	Max.	Min.	Precip.	Max.	Min.	Precip.	Max.	Min.	Precip.	Max.	Min.	Precip.	Max.	Min.	Precip.	Max.	Min.	Precip.
1	58	28	------	53	36	.03	71	55	.07	94	67	------	86	63	.06	81	65	------
2	55	29	------	62	32	------	69	51	------	94	66	------	90	63	------	82	59	------
3	46	30	------	63	41	------	71	42	------	90	69	T.	89	70	.14	86	60	------
4	56	30	------	76	42	------	73	64	.02	80	65	T.	104	61	T.	90	60	.23
5	46	29	T.	81	43	------	72	64	------	90	56	------	98	73	------	90	67	T.
6	38	17	------	80	39	------	67	62	------	91	58	------	97	74	------	91	69	.02
7	41	27	T.	87	54	.13	66	60	------	92	56	------	84	73	------	83	59	.01
8	41	29	.08	70	42	------	68	61	.05	92	61	------	88	58	------	79	51	------
9	73	21	------	81	43	------	73	65	------	90	69	------	89	56	------	83	56	------
10	67	35	------	73	42	------	81	68	------	93	58	------	93	71	.53	75	61	.99
11	74	43	------	69	42	------	80	64	------	100	62	------	84	58	.01	70	56	.42
12	85	54	------	61	47	.03	83	57	------	91	71	------	79	54	1.36	64	56	.22
13	72	50	T.	54	44	1.18	79	51	------	94	68	.16	75	45	------	76	44	------
14	62	30	------	60	52	.99	78	49	1.00	88	69	------	67	52	.67	67	49	T.
15	73	40	.08	68	42	.02	80	47	.12	99	67	------	81	60	------	55	34	------
16	55	42	------	60	38	------	69	50	.04	97	62	------	88	60	------	72	40	------
17	63	34	------	59	41	.02	75	53	.07	96	60	T.	93	67	------	59	34	------
18	50	45	.20	60	34	------	74	49	.05	94	64	------	95	71	------	68	31	------
19	76	45	------	65	36	------	75	43	------	91	69	T.	95	69	------	76	46	------
20	56	43	.55	77	57	.41	72	50	.27	87	60	------	91	66	------	85	50	------
21	------	41	------	66	45	.85	67	48	.04	92	55	------	94	65	------	70	47	------
22	55	37	.06	72	52	.02	81	56	------	98	61	T.	79	58	T.	59	48	------
23	------	41	------	77	54	.22	78	60	.94	97	64	------	84	49	------	67	36	------
24	63	42	.16	82	59	------	73	53	------	96	66	------	90	58	------	81	42	------
25	54	38	------	85	60	------	79	46	------	102	66	------	80	48	------	83	40	------
26	53	36	------	82	66	------	82	48	.18	100	65	------	70	45	------	81	56	1.70
27	63	36	------	79	50	------	75	52	------	101	67	------	76	42	------	67	53	T.
28	68	33	------	82	47	.01	85	51	------	102	68	------	80	42	T.	65	30	T.
29	------	46	.40	75	60	.05	88	52	------	101	70	------	81	43	------	56	28	------
30	46	41	.64	77	53	------	93	63	------	103	69	------	88	49	------	70	39	------
31	------	------	------	74	58	.06	------	------	------	88	72	.64	76	64	.96	------	------	------
Mean	57.8	36.7	------	71.3	46.8	------	76.0	54.6	------	94.2	64.5	------	86.0	58.9	------	74.0	49.2	------

MEAN TEMPERATURE AND TOTAL PRECIPITATION

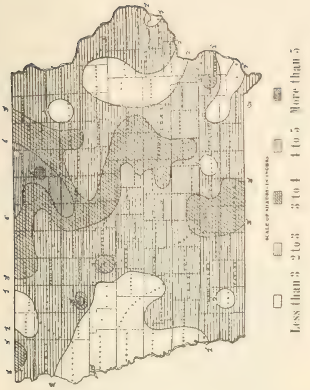
With Departures From the Normal---Ames, Iowa

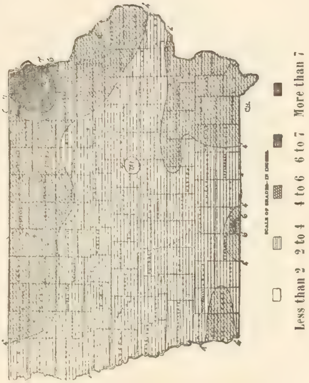
	April		May		June		July		August		September	
	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.
Monthly	47.2	2.77	59.0	4.02	65.3	2.85	79.4	0.80	72.4	3.73	61.6	3.59
Excess (+) or deficiency (—)	— 2.4	— .09	— 2.2	— .75	— 3.9	1.69	+ 5.4	—3.51	+ 0.1	— .08	— 1.8	— .08

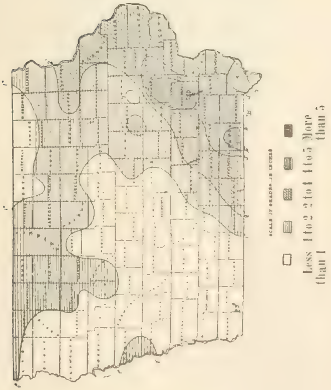
STATE OF IOWA

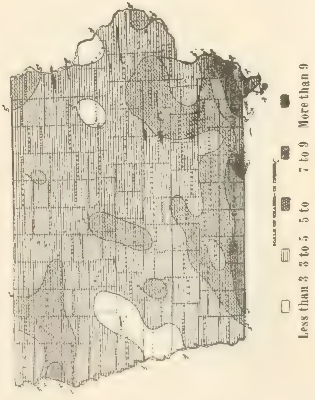
	April		May		June		July		August		September	
	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.	Mean Temp.	Total precip.
Monthly	47.1	2.62	56.9	4.93	64.5	3.71	79.7	1.78	74.0	2.58	62.5	3.80
Excess (+) or deficiency (—)	— 1.6	— .24	— 0.6	+ .36	— 4.6	— .67	+ 5.6	—2.18	+ 2.2	—1.10	— 1.1	+ .36

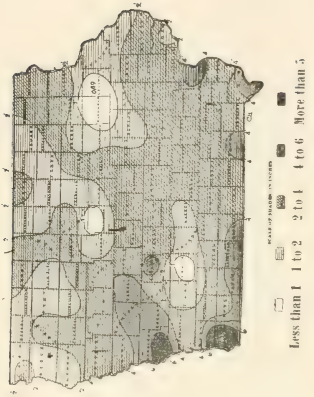
Average precipitation for the season March to September, inclusive, was 21.08 inches for the state; deficiency, 5.67. Mean tetmperature for the same period, 60.4°; excess, 0.3°.

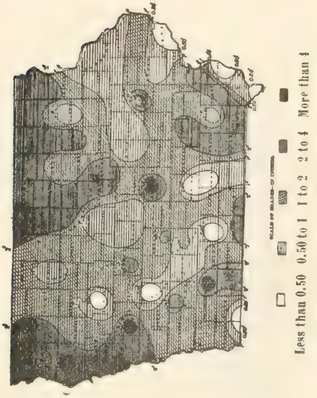

SCALE OF SHADES—IN INCHES
Less than 3
2 to 3
3 to 4
4 to 5
More than 5

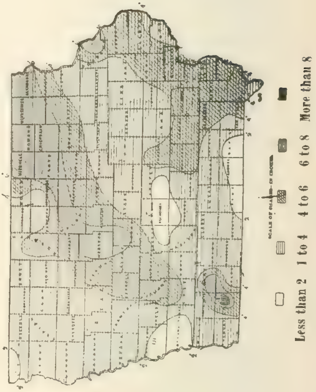

SCALE OF SHADES—IN INCHES
Less than 2
2 to 4
4 to 6
6 to 7
More than 7


SCALE OF SHADES—IN INCHES
Less than 1
1 to 2
2 to 4
4 to 5
More than 5


SCALE OF SHADES—IN INCHES
Less than 3
3 to 5
5 to
7 to 9
More than 9


SCALE OF SHADES IN INCHES
Less than 1
1 to 2
2 to 4
4 to 6
More than 6


SCALE OF SHADES IN INCHES
Less than 0.50
0.50 to 1
1 to 2
2 to 4
More than 4


SCALE OF SHADES IN INCHES
Less than 2
2 to 4
4 to 6
6 to 8
More than 8

FINANCIAL STATEMENT OF SHORT COURSE ASSOCIATIONS OF IOWA FOR YEAR ENDING JUNE 30, 1916.

Location of Short Course	Number of sessions	Total attendance	Receipts				Disbursements				Cash on hand	Overdrafts
			Cash on hand	Miscellaneous receipts	State aid	Total receipts	For speakers and judge	Premiums	Miscellaneous expense	Total disbursements		
Appanoose, Centerville	14	840	$ 119.31	$ 443.10	$ 118.20	$ 680.61	$ 224.28	$ 295.50	$ 149.65	$ 669.43	$ 11.18	--------
Clarke, Osceola	15	1,600	----------	324.55	121.51	466.06	95.35	86.28	237.56	419.19	26.87	--------
Dallas, Dexter	15	1,500	166.40	880.50	135.32	1,182.22	60.50	337.80	475.58	873.88	308.34	--------
Decatur, Leon	17	2,550	----------	496.85	160.00	656.85	191.92	212.50	276.85	681.27	----------	$ 24.42
Dickinson, Lake Park	17	3,400	----------	807.00	76.30	883.30	158.07	190.75	307.64	656.46	226.84	--------
Franklin, Hampton	14	2,650	14.59	273.95	75.00	363.54	192.35	----------	249.24	441.59	----------	78.05
Guthrie, Guthrie Center	12	1,440	----------	472.00	75.00	547.00	150.50	310.00	78.50	539.00	8.00	--------
Ida, Ida Grove	12	360	9.50	607.53	214.30	831.33	291.18	348.25	191.90	831.33	----------	--------
Lucas, Derby	11	2,200	285.14	682.00	275.00	1,242.14	50.00	560.25	262.70	872.95	369.19	--------
Madison, Winterset	7	950	7.40	370.00	249.40	626.80	31.36	436.00	92.55	559.91	66.89	--------
Marion, Pleasantville	12	1,200	218.00	844.50	75.00	1,137.50	82.55	273.50	483.25	839.30	298.20	--------
Monroe, Albia	12	1,680	----------	321.52	75.00	396.52	88.28	----------	268.59	356.87	39.65	--------
Pottawattamie, Treynor	14	2,800	367.90	981.90	75.00	1,424.80	233.65	217.25	537.90	988.80	436.00	--------
Union, Creston	10	500	----------	210.00	36.30	246.30	----------	90.75	303.00	393.75	----------	147.45
Wayne, Allerton	10	1,750	27.40	208.80	75.00	311.20	58.95	----------	226.29	285.24	25.96	--------
Wright, Belmond	14	1,400	60.81	469.20	75.00	605.01	99.25	101.50	397.00	597.75	7.26	--------
Total	206	35,820	$1,276.45	$8,393.40	$1,911.33	$ 11,581.18	$2,008.19	$3,460.33	$4,538.30	$ 10,006.72	$1,824.38	$ 249.92

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES FOR THE FISCAL YEAR JULY 1, 1915, TO JUNE 30, 1916.

Number	Location of Institute, County, City or Town	Number sessions	Total attendance	Receipts				Disbursements				Cash on hand	Overdrafts
				Cash on hand	Miscellaneous receipts	State aid	Total receipts	For speakers and judges	Premiums	Miscellaneous expense	Total disbursements		
1	Adair, Canby	5	750	$ 12.32	$ 219.25	$ 37.50	$ 269.07	$ 30.33	$ 158.82	$ 26.10	$ 215.15	$ 53.92	--------
2	Adair, Adair	3	225	21.02	57.00	37.50	115.52	21.20	36.85	27.60	85.65	29.87	--------
3	Allamakee	15	187	314.83	13.50	75.00	403.33	47.53	--------	35.65	83.18	320.15	--------
4	Appanoose, Moravia	7	900	51.16	358.70	25.00	434.86	13.96	267.91	55.50	337.40	97.46	--------
5	Appanoose, Moulton	5	1,500	--------	269.70	25.00	294.70	27.59	149.45	72.12	249.16	45.54	--------
6	Appanoose, Exline	11	1,800	56.30	144.68	25.00	225.98	49.30	96.64	27.15	173.09	52.89	--------
7	Appanoose, Mystic	6	7,000	75.98	893.01	--------	969.99	55.18	561.65	339.73	956.56	13.43	--------
8	Appanoose, Udell	20	8,000	14.27	227.05	--------	241.32	31.18	39.25	136.63	207.06	34.26	--------
9	Benton, Blairstown	6	350	10.46	165.45	37.50	213.41	18.55	132.39	36.80	187.73	25.68	--------
10	Benton, Vinton	11	1,400	15.00	453.75	37.50	506.25	201.16	51.00	258.59	483.75	12.70	--------
11	Black Hawk, La Porte City	5	525	--------	--------	37.50	37.50	--------	36.50	19.60	56.10	--------	18.60
12	Black Hawk, Hudson	8	800	.57	--------	37.50	38.07	43.56	--------	41.17	84.73	--------	46.66
13	Boone, Boxholm	5	270	11.36	93.40	75.00	179.76	10.95	87.41	13.75	112.11	67.65	--------
14	Bremer, Sumner	10	2,000	--------	88.99	75.00	163.99	130.99	33.00		163.99	--------	--------
15	Buchanan, Independence	4	1,600	23.10	37.95	75.00	136.05	52.08	15.00	8.73	75.81	60.24	--------
16	Buena Vista, Newell	7	1,050	208.40	459.68	37.50	705.58	63.00	290.75	130.33	484.08	221.50	--------
17	Buena Vista, Storm Lake	9	1,500	98.49	274.10	37.50	410.09	33.00	96.75	140.24	269.99	140.10	--------
18	Butler, Clarksville	7	500	4.55	20.80	75.00	100.35	17.08	40.75	58.02	115.85	--------	15.50
19	Calhoun, Rockwell City	6	600	40.46	151.50	75.00	266.96	38.17	66.30	101.98	206.45	60.51	--------
20	Cass, Griswold	8	2,000	14	456.00	37.50	493.64	83.00	310.54	128.60	522.14	--------	28.50
21	Cass, Atlantic	5	375	3,053	10.00	37.50	78.03	17.09	--------	23.10	40.19	37.84	--------
22	Cedar, Massillon	6	210	61.00	37.25	75.00	173.25	15.88	90.90	38.85	145.63	27.62	--------
23	Cerro Gordo, Hanford	8	320	--------	57.00	75.00	132.00	60.98	19.00	30.92	110.90	21.10	--------
24	Cherokee, Cherokee	5	940	29.98	52.80	37.50	120.28	17.50	49.75	38.22	105.47	14.81	--------
25	Cherokee, Washta	4	315	78.14	134.45	37.50	250.09	20.01	43.75	51.70	115.46	134.63	--------
26	Clay, Everly	6	750	42.52	66.05	37.50	146.07	37.84	30.50	38.05	106.39	39.68	--------
27	Clay, Dickens	7	370	--------	60.55	37.50	98.05	23.60	17.50	9.94	51.04	47.01	--------
28	Clayton, Edgewood	9	1,000	6.00	87.00	75.00	168.00	24.60	50.25	23.25	98.10	69.90	--------
29	Clinton, Calamus	6	900	62.27	395.55	75.00	532.82	44.51	291.05	159.00	494.56	38.26	--------
30	Davis, Pulaski	6	2,400	74.33	136.40	37.50	248.23	52.57	61.50	131.41	245.48	2.75	--------

31	Davis, Bloomfield	6	900	37.37	418.90	37.50	493.77	35.67	280.48	15.00	461.15	32.62	--------
32	Delaware, Manchester	6	4,800	60.00	140.00	75.00	275.00	135.00	------------	90.00	225.00	50.00	--------
33	Des Moines, Danville	6	2,400	127.62	498.00	75.00	700.62	32.37	355.60	168.55	556.52	144.10	--------
34	Dickinson, Milford	9	930	61.06	200.08	75.00	336.14	51.29	93.57	111.42	256.28	79.86	--------
35	Dubuque, Cascade	7	1,500	39.50	132.75	75.00	247.25	78.60	71.00	57.70	207.30	39.95	--------
36	Fayette, Arlington	7	1,650	28.79	223.75	75.00	327.54	97.10	100.00	109.88	306.98	20.56	--------
37	Floyd, Charles City	6	370	34.60	1.50	27.78	63.88	10.74		17.04	27.78	36.10	--------
38	Fremont, Sidney	7	3,400	17.79	147.92	75.00	240.71	73.51	62.50	88.90	224.91	15.80	--------
39	Grundy, Reinbeck	4	150	7.29	125.50	75.00	207.79	44.58	80.00	64.00	188.58	19.21	--------
40	Hamilton, Homer	3	200		10.00	75.00	85.00	16.00	16.25	52.30	84.55	.45	--------
41	Hancock, Britt	[illegible]	1,200			75.00	75.00	55.00	8.00	22.00	85.00	--------	10.00
42	Hardin, Ackley	10	1,755	246.32	462.60	75.00	783.92	17.35	387.25	95.75	500.35	283.57	--------
43	Harrison, Logan	6	180		2.50	43.46	45.96	10.56		32.60	43.16	2.80	--------
44	Henry, Mt. Pleasant	5	1,050	2.90	590.65	75.00	668.55	13.10	414.90	163.30	591.30	77.25	----
45	Howard, Cresco	9	1,200			75.00	75.00	18.59		56.41	75.00	--------	--------
46	Iowa, Williamsburg	10	646	81.40	21.85	75.00	178.25	22.68	57.00	30.78	110.46	67.79	--------
47	Jackson, Andrew	4	650	3.75		56.80	60.55	26.80		30.00	56.80	3.75	--------
48	Jasper, Mingo	4	500		45.97	37.50	83.47	15.22	10.00	46.10	71.32	12.15	--------
49	Jasper, Prairie City	7	500	93.86	180.50	37.50	311.86	39.17	88.80	69.00	196.97	114.89	--------
50	Jefferson, Fairfield	7	425	31.19	158.25	75.00	264.44	78.30	107.00	100.31	285.61	--------	21.17
51	Johnson, Iowa City	6	1,400	53.63	225.25	75.00	353.88	39.86	179.45	65.73	285.04	68.84	--------
52	Jones, Martelle	8	650		60.01	37.50	97.51	44.44	7.87	52.70	105.01	--------	7.50
53	Jones, Anamosa	6	176			37.50	37.50	23.90		58.38	82.28	--------	44.78
54	Kossuth, Titonka	4	1,800		276.25	37.50	313.75	55.00	135.55	75.00	265.55	48.20	--------
55	Kossuth, Swea City	3	1,325	28.22	86.61	37.50	152.33	86.24		41.40	127.64	24.69	--------
56	Lee, Donnellson	5	1,600	250.49	320.82	75.00	646.31	112.65	250.00	65.75	428.77	217.54	--------
57	Linn, Springville	5	450	48.22	17.50	37.50	103.22	46.83		14.79	61.62	41.60	--------
58	Linn, Walker	9	900	17.97	103.91	37.50	159.38	28.53	61.75	27.00	117.28	42.10	--------
59	Lyon, Inwood	9	900	79.72	257.33	75.00	412.05	55.03	33.00	111.01	199.04	213.01	--------
60	Mahaska, Oskaloosa	5	600	830.00	459.75	75.00	1,364.75	62.37	280.30	353.14	695.81	668.94	--------
61	Mills, Malvern	3	650		130.35	71.49	201.84	18.92	130.37	52.55	201.84	--------	--------
62	Mitchell, St. Ansgar	6	1,400			75.00	75.00	16.78		48.05	94.38	--------	19.38
63	Montgomery, Stanton	6	900	116.54	87.90	75.00	279.44	93.69	28.50	45.76	167.95	111.49	--------
64	Muscatine, W. Liberty	5	250	----	3.47	75.00	78.47	45.97	9.25	23.25	78.47	--------	--------
65	Page, Clarinda	3	1,700	---	810.53	75.00	885.53	112.78	365.50	407.25	885.53	--------	--------
66	Palo Alto, Graettinger	6	3,000	79.94	271.46	37.50	388.90	59.37	94.25	104.80	258.42	130.48	--------
67	Palo Alto, Emmetsburg	4	400	34.06	8.80	37.50	80.36	13.66	19.00	15.00	47.66	32.70	--------
68	Polk, Altoona	5	1,500	155.10	475.32	18.75	649.17	32.00	463.75	12.00	507.75	141.42	--------
69	Polk, Runnells	4	400	21.66	318.45	18.75	358.86	23.36	212.75	55.84	291.95	66.91	--------
70	Polk, Mitchellville	2	800	360.00	230.00	18.75	608.75	22.07	149.00	143.25	314.32	294.43	--------
71	Polk, Bondurant	10	700	16.97	163.13	18.75	198.85	62.49	--------	61.20	123.69	75.16	--------
72	Poweshiek, Searsboro	3	200		85.37	25.00	110.37	19.82	55.95	11.10	86.87	23.50	--------
73	Poweshiek, Deep River	3	1,500	104.82	51.74	25.00	181.56	11.14	138.49	81.93	231.56	--------	50.00
74	Poweshiek, Brooklyn	5	2,000	134.65	421.61	25.00	581.26	22.59	303.25	229.95	555.79	25.47	--------
75	Ringgold, Diagonal	5	1,500	24.26	269.20	75.00	368.46	22.71	205.35	153.00	381.06	--------	12.60
76	Sac, Odebolt	11	777	118.50	762.75	75.00	956.25	11.61	592.00	333.51	937.12	19.13	--------

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES—Continued.

Number	Location of Institute, County, City or Town	Number sessions	Total attendance	Receipts				Disbursements				Cash on hand	Overdrafts
				Cash on hand	Miscellaneous receipts	State aid	Total receipts	For speakers and judges	Premiums	Miscellaneous expense	Total disbursements		
77	Scott, Eldridge	6	1,500	152.94	308.75	25.00	486.69	62.06	100.00	197.38	349.44	137.25	--------
78	Scott, Princeton	6	1,000	124.48	184.50	25.00	333.98	31.40	114.00	79.91	225.31	108.67	--------
79	Scott, Dixon	7	900	84.84	217.00	25.00	326.84	29.45	111.50	74.23	215.18	111.66	--------
80	Shelby, Harlan	6	718	94.85	106.82	75.00	276.67	25.69	184.00	24.05	233.74	42.93	--------
81	Sioux, Hawarden	11	1,177	168.43	195.65	75.00	439.08	76.45	131.25	104.90	312.60	126.48	--------
82	Story, Roland	5	750	15.00	88.50	75.00	178.50	20.33	63.25	48.51	132.09	46.41	--------
83	Tama, Traer	5	250	30.42	30.50	75.00	135.92	26.51	28.50	22.85	77.86	58.06	--------
84	Union, Afton	9	900	6.62	369.75	37.50	413.87	75.49	40.75	144.43	260.67	153.20	--------
85	Union, Cromwell	11	1,000	47.23	199.27	37.50	284.00	51.35	96.00	85.09	232.44	51.56	--------
86	Van Buren	15	2,100	----------	----------	75.00	75.00	30.65	30.00	15.05	75.70	----------	.70
87	Wapello, Eldon	9	900	65.42	72.62	37.50	175.54	40.15	13.00	95.96	149.11	26.43	--------
88	Wapello, Ottumwa	3	700	390.64	----------	37.50	428.14	35.00	181.75	77.50	294.25	133.89	--------
89	Warren, Indianola	4	1,200	293.17	326.64	75.00	694.81	16.00	301.75	21.50	[illegible].25	265.56	--------
90	Webster, Harcourt	9	975	149.49	183.05	75.00	407.54	36.39	141.00	82.64	260.03	147.51	--------
91	Woodbury, Lawton	8	1,600	42.55	493.50	75.00	611.05	27.50	253.95	280.83	562.28	48.77	--------
92	Worth, Northwood & Kensett	11	550	15.51	----------	75.00	90.51	30.15	----------	65.25	95.40	----------	4.89
	Total	620	115,700	$6,313.96	$ 17,616.00	$4,852.53	$ 28,782.49	$3,963.83	$ 10,855.75	$7,899.74	$ 22,719.32	$6,343.45	$ 280.28

PART XI

Crop and Other Farm Statistics for the Year Ending December 31, 1916, Collected by Township Assessors

Under this head will be found the tables presenting crop and farm statistics for the year 1916, collected by the township assessors of the state and reported to the Department of Agriculture by the county auditors as provided for in Chapter 86, Acts of the Thirty-third General Assembly.

Readers interested in learning of Iowa resources are invited to study these tables. They represent neither guess work nor estimates, but actual facts, furnished at first hand by the men who know—the Iowa farmers. The figures are altogether conservative. If they are open to criticism in any way it is that the totals are too low, possibly from 8 to 10 per cent below actual production, due to the fact that human nature is not given to exaggerated statements within hearing of the assessor.

Table No. 1 presents authentic information that is not furnished annually from any other source, giving in reliable figures the disposition of farm land for various purposes, also wages paid for farm work.

Tables 2 and 3 present the yields of the various crops of grains, hay, etc., showing yield to the acre as well as totals, all by counties.

Table No. 4 deals with the livestock of the state, also poultry and poultry products. In connection with this table No. 6 will appeal with especial significance to all who are keeping tab on the fight Iowa is making for hog cholera control. A comparison of the figures representing the losses for the two years is proof that the most gratifying progress is being made by the veterinary and other officials who have charge of the work.

Table No. 5 presents figures setting forth the production of pop corn, sweet corn, grass seeds, etc.

TABLE NO. 1.

Total number, average size and total acreage of farms, total acreage occupied by farm buildings, public highways and feed lots, acreage in pasture, garden, orchard, crops not otherwise enumerated and land not utilized for any purpose. Number silos on farms. Total number bushels apples harvested, monthly wage paid farm help, summer and winter months, by counties, for the year 1916.

Counties	Number of farms	Average size of farms	Total acreage of farms	Total number of acres occupied by farm buildings, public highways and feed lots	Acreage in pasture	Acreage in garden	Acreage in orchard	Number bushe's apples harvested	Acreage in crop not otherwise enumerated	Acreage in waste land not utilized for any purpose	Number of silos on farms	Av. mo. wage paid farm help, summer months	Av. mo. wage paid farm help, winter months
Adair	2,005	158.7	318,252	14,893	113,788	445	1,995	11,831	171	747	84	$32.16	$24.44
Adams	1,646	146.8	241,749	9,571	96,576	151	857	9,398	133	592	130	34.27	29.09
Allamakee	2,095	171.9	360,157	9,317	172,317	251	812	16,890	354	30,965	197	31.32	22.16
Appanoose	1,718	141.1	242,424	8,827	111,898	697	1,026	7,171	775	3,696	25	31.00	28.71
Audubon	1,709	154.4	263,847	12,815	69,212	93	766	15,088	12	559	114	34.53	23.64
Benton	2,340	176.4	412,977	18,633	112,199	293	991	12,112	206	600	258	37.31	24.87
Black Hawk	2,163	157.9	341,546	18,618	92,752	292	998	13,385	2,067	1,742	489	34.78	22.56
Boone	2,404	131.7	316,645	13,985	75,114	177	2,518	12,552	341	1,610	91	35.00	20.00
Bremer	1,766	187.4	330,951	17,496	59,633	463	868	9,360	168	1,265	295	35.93	18.50
Buchanan	2,195	153.1	336,088	13,778	103,814	427	489	9,768	1,196	781	181	33.00	26.35
Buena Vista	1,926	179.1	341,989	18,734	71,035	119	392	10,316	918	2,318	160	36.62	25.18
Butler	1,989	166.4	330,940	15,459	91,591	205	719	14,755	1,782	1,502	180	34.13	22.17
Calhoun	1,881	178.9	336,687	15,278	56,167	93	464	9,618	378	1,509	42	34.80	30.83
Carroll	1,968	168.9	332,374	17,288	81,320	316	792	14,858	116	1,533	50	32.50	22.75
Cass	2,027	166.5	337,516	14,127	107,448	218	1,511	13,925	138	1,603	110	34.72	27.77
Cedar	1,994	163.8	326,511	14,401	103,765	331	709	8,219	145	800	158	33.60	26.12
Cerro Gordo	1,754	174.7	306,434	15,755	76,778	254	591	11,391	1,330	4,471	178	36.37	25.36
Cherokee	1,759	191.7	337,304	16,640	78,045	280	694	14,556	155	959	116	37.98	19.58
Chickasaw	1,847	149.7	276,529	12,331	84,061	67	234	4,588	512	1,104	190	32.44	21.99
Clarke	1,341	166.3	223,069	9,237	91,431	263	630	5,873	214	1,817	59	30.52	31.12
Clay	1,568	206.6	323,911	17,418	75,688	149	400	16,239	567	3,549	83	35.44	25.33
Clayton	2,750	152.5	419,233	13,681	167,176	544	1,318	24,492	508	14,551	304	32.58	24.79
Clinton	2,516	154.4	389,515	16,333	138,654	160	353	5,141	338	1,272	101	33.83	20.89
Crawford	2,346	181.8	426,483	20,319	116,789	248	828	16,294	117	1,783	22	36.56	22.07

Dallas	2,203	155.1	341,797	14,898	94,699	287	1,876	22,378	184	2,100	122	33.69	**30.97**
Davis	2,094	143.3	300,104	9,501	140,954	395	2,004	13,205	533	2,616	55	31.42	**26.70**
Decatur	2,580	108.7	280,498	10,286	114,185	242	879	10,747	949	3,144	64	30.00	**25.00**
Delaware	2,012	165.6	333,199	13,024	114,129	325	451	9,355	215	2,802	482	31.12	**24.81**
Des Moines	1,701	129.4	220,123	7,863	82,165	834	1,879	12,995	1,999	5,368	125	29.84	29.07
Dickinson	945	209.3	197,858	9,156	63,285	64	239	8,361	331	3,685	51	35.00	26.00
Dubuque	2,213	154.5	342,070	9,866	140,750	889	1,247	18,692	150	4,517	81	34.75	22.11
Emmet	1,398	148.8	207,999	9,541	54,021	44	202	6,475	724	5,599	116	31.79	26.83
Fayette	2,882	110.5	418,354	18,532	146,661	352	591	18,283	629	3,324	499	35.23	27.20
Floyd	1,807	161.	290,944	14,541	71,648	139	291	5,046	4,145	1,580	250	26.20	25.82
Franklin	1,922	171.7	335,998	17,698	80,795	236	533	9,009	881	4,139	230	33.21	22.70
Fremont	1,678	157.7	264,702	10,842	68,208	137	1,747	62,335	910	5,678	74	33.31	31.09
Greene	1,881	170.	319,845	14,606	75,847	150	617	8,738	102	1,959	39	33.86	2,483
Grundy	1,592	188.9	300,768	15,306	70,282	69	211	3,489	27	118	130	35.65	23.10
Guthrie	2,133	158.8	338,776	12,947	112,177	229	1,809	22,440	288	2,427	32	33.00	30.73
Hamilton	2,018	169.3	341,747	15,610	70,460	164	407	7,811	456	3,378	91	36.63	30.61
Hancock	1,850	186.	344,245	16,036	82,500	157	436	11,525	1,181	8,201	222	35.20	25.73
Hardin	1,834	163.2	299,242	16,558	74,256	369	588	8,150	114	1,070	102	35.02	28.52
Harrison	2,359	149.9	353,639	15,073	93,525	229	1,518	39,112	645	4,857	56	33.55	28.70
Henry	1,678	141.8	238,030	8,901	94,627	270	1,081	9,556	176	649	88	31.93	29.32
Howard	1,499	170.7	255,966	10,016	80,541	126	181	5,042	867	1,275	242	31.96	19.35
Humboldt	1,304	190.9	248,955	14,421	44,027	71	350	9,985	1,660	4,753	155	36.39	24.58
Ida	1,378	195.5	268,273	13,081	59,849	190	492	10,221	10	114	40	38.64	20.15
Iowa	2,092	159.	332,784	12,704	124,832	387	1,170	24,591	386	2,206	255	35.54	22.64
Jackson	2,154	159.1	342,809	8,012	176,563	625	1,137	15,461	265	4,414	116	35.93	27.86
Jasper	2,897	148.5	429,875	19,536	126,301	364	1,370	11,789	77	1,307	196	35.04	36.98
Jefferson	1,691	139.	235,051	8,449	96,510	470	1,146	26,853	27	992	97	31.50	26.00
Johnson	2,288	142.6	126,476	9,807	112,264	574	1,694	17,973	199	2,771	216	32.81	24.05
Jones	1,810	170.7	309,066	8,914	28,677	355	565	7,525	334	1,180	126	33.65	22.62
Keokuk	2,305	142.7	329,013	12,951	118,801	275	1,648	14,536	643	3,852	143	31.00	26.06
Kossuth	2,715	201.	545,560	26,130	114,457	346	822	28,693	1,388	13,753	298	33.84	24.16
Lee	1,870	141.9	265,299	7,908	123,680	589	1,889	17,273	1,287	6,489	122	29.90	27.82
Linn	2,860	128.1	366,402	13,917	120,110	937	1,216	16,007	380	2,344	393	31.43	24.80
Louisa	1,263	159.4	201,373	4,993	65,347	149	1,382	11,478	1,744	7,041	111	32.59	34.02
Lucas	1,401	155.1	217,175	5,921	94,312	169	1,084	13,973	311	1,496	72	29.19	27.69
Lyon	1,669	201.5	343,173	17,898	61,647	265	170	4,304	379	862	46	36.62	25.35
Madison	1,916	168.8	323,389	13,853	130,810	667	1,664	29,778	357	4,016	147	33.36	30.11
Mahaska	2,566	129.6	332,662	10,688	105,803	482	2,470	27,786	763	3,716	140	32.90	28.60
Marion	2,125	146.6	311,522	9,991	118,196	549	1,340	17,603	185	3,803	111	30.23	26.41
Marshall	2,093	158.2	331,175	16,091	84,284	349	719	5,769	521	1,321	183	34.48	12.06
Mills	1,461	162.8	237,825	9,793	65,583	178	1,675	22,301	739	7,692	29	35.01	32.64
Mitchell	1,786	154.4	275,725	13,950	69,737	240	294	7,159	1,136	1,795	190	35.70	22.41
Monona	2,167	179.9	389,896	14,990	97,494	736	1,011	18,454	580	14,918	44	37.00	21.45
Monroe	1,493	140.9	210,418	8,789	168,962	795	2,316	15,777	83	1,844	79	28.40	27.00
Montgomery	1,666	144.6	240,920	9,277	76,360	210	1,735	8,090	68	925	49	32.12	28.67
Muscatine	1,574	148.1	233,164	7,985	78,339	215	864	4,239	4,319	1,630	180	32.07	25.34
O'Brien	1,733	137.	337,442	18,332	72,296	106	386	12,859	690	752	59	35.65	18.94

TABLE NO. 1—Continued

Counties	Number of farms	Average size of farms	Total acreage of farms	Total number of acres occupied by farm buildings, public highways and feed lots	Acreage in pasture	Acreage in garden	Acreage in orchard	Number bushels apples harvested	Acreage in crop not otherwise enumerated	Acreage in waste land not utilized for any purpose	Number of silos on farms	Av. mo. wage paid farm help, summer months	Av. mo. wage paid farm help, winter months
Osceola	1,140	207.4	236,442	12,645	46,125	55	85	5,912	186	1,997	43	31.94	20.94
Page	2,012	151.1	304,124	12,103	96,814	183	1,193	13,709	146	2,286	33	33.15	28.33
Palo Alto	1,544	201.1	310,496	16,667	62,866	98	245	6,375	410	1,566	60	35.95	23.75
Plymouth	2,596	200.2	519,896	26,589	108,516	290	490	11,284	704	942	108	34.58	21.28
Pocahontas	2,156	156.2	336,745	17,106	52,610	68	278	7,826	1,363	2,923	57	35.55	16.11
Polk	2,310	140.7	325,059	12,552	87,066	891	2,481	54,264	4,714	3,792	156	33.56	29.13
Pottawattamie	3,186	156.9	506,234	21,797	143,566	867	2,507	35,064	1,376	3,620	54	35.06	24.03
Poweshiek	2,116	158.8	336,099	12,659	113,832	244	1,154	6,111	59	456	208	34.17	27.62
Ringgold	1,865	159.9	298,151	10,837	114,011	209	1,347	13,069	92	978	125	29.40	28.95
Sac	1,672	190.8	319,170	17,975	69,974	95	632	10,279	106	985	59	37.87	28.93
Scott	2,185	122.4	267,186	9,471	80,205	3,378	1,397	10,410	2,101	1,248	177	34.44	17.76
Shelby	2,012	177.3	356,745	15,510	93,639	376	1,235	28,102	192	1,558	44	36.72	19.00
Sioux	2,418	187.1	452,380	22,115	77,541	1,862	953	5,178	742	2,024	108	32.83	22.40
Story	2,184	149.6	326,864	14,936	64,934	197	268	4,056	757	1,606	143	36.91	27.93
Tama	2,454	168.4	413,492	18,186	130,826	329	869	11,666	126	2,036	118	35.60	27.86
Taylor	2,064	147.8	305,030	14,316	110,923	503	1,850	16,726	155	3,290	147	30.34	26.86
Union	1,536	159.2	244,546	9,973	101,328	151	1,232	18,555	226	1,391	76	32.00	32.34
Van Buren	1,834	140.9	258,494	8,069	131,810	46	1,778	15,503	688	1,240	160	30.25	30.78
Wapello	1,900	120.2	228,328	7,488	83,561	397	1,786	30,965	689	3,246	72	31.15	28.09
Warren	2,339	139.2	325,522	12,813	145,509	378	1,883	29,197	610	1,495	141	31.61	30.67
Washington	2,018	152.5	307,760	12,341	112,120	245	1,687	19,520	769	441	95	32.17	28.12
Wayne	1,720	160.7	276,514	10,747	98,724	198	997	4,807	493	1,357	61	28.40	24.00
Webster	2,428	170.3	413,509	18,312	86,775	169	503	15,179	170	5,428	111	34.70	24.50
Winnebago	1,498	161.9	242,536	12,613	57,625	67	306	7,415	264	10,224	102	31.52	21.23
Winneshiek	2,653	152.	403,275	16,290	146,682	306	798	20,390	636	6,347	249	35.14	23.96
Woodbury	2,652	180.9	479,762	20,758	107,195	430	1,013	33,151	1,522	2,927	199	36.23	30.06
Worth	1,375	170.9	235,117	12,369	61,261	--------	200	6,984	703	2,582	106	35.06	20.50
Wright	1,774	201.5	357,523	17,105	67,435	78	226	6,994	1,194	5,141	79	35.71	24.36
Total	195,904	160.2	31,374,756	1,358,478	9,461,680	34,586	109,744	1,449,712	67,871	321,936	13,450	$33.30	$25.26

TABLE NO. 2.

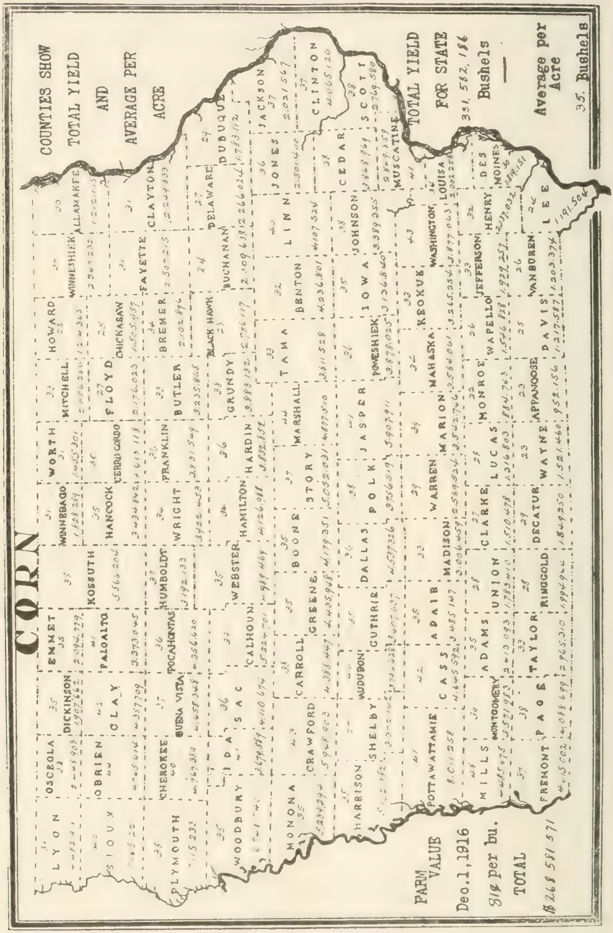
Acreage, yield per acre and total yield of corn, oats, winter wheat, spring wheat and barley, by counties for the year 1916.

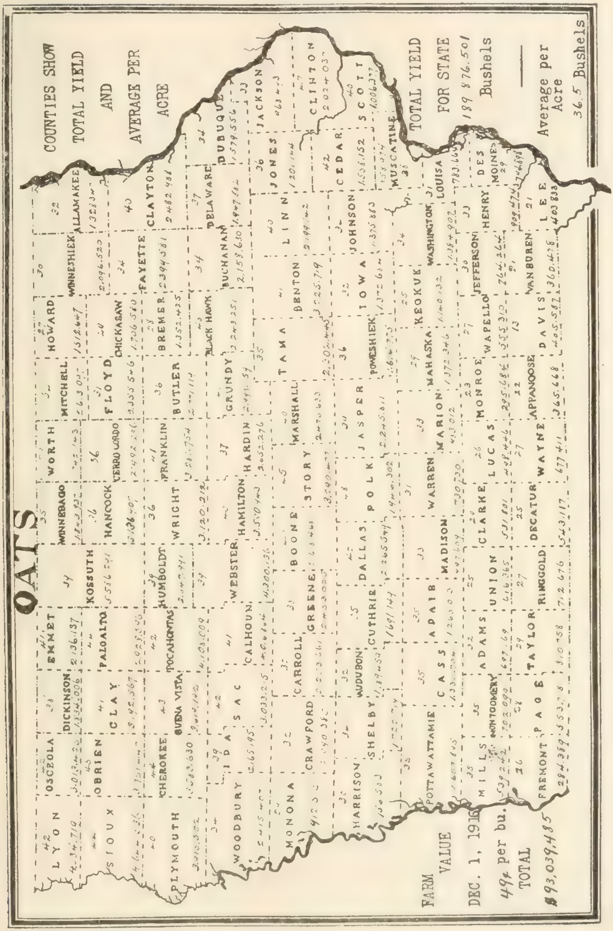
Counties	Corn			Oats			Winter Wheat			Spring Wheat			Barley		
	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels
Adair	99,497	35.	3,485,147	36,290	34.8	1,263,013	3,293	12.1	40,118	1,233	9.7	12,040	1,955	27.1	53,133
Adams	69,920	34.5	2,413,063	22,065	31.7	697,169	5,260	12.	63,200	291	7.9	2,316	643	26.6	17,125
Allamakee	40,174	30.2	1,212,155	41,845	31.7	1,328,347	660	13.1	8,665	1,014	15.8	16,100	5,823	26.6	154,844
Appanoose	40,879	23.2	952,156	16,163	22.6	365,068	2,057	9.	18,572	38	5.9	225	------	------	------
Audubon	83,461	45.5	3,796,628	37,522	31.7	1,189,459	1,725	17.9	30,831	2,313	10.1	23,341	6,561	30.5	200,168
Benton	131,461	32.2	4,236,801	79,081	40.7	3,225,719	140	13.1	1,836	455	16.1	7,329	8,118	32.	260,023
Black Hawk	97,087	28.4	2,756,117	56,800	39.5	2,243,251	874	15.8	13,803	224	20.3	4,545	2,636	30.9	81,623
Boone	120,737	34.6	4,179,351	64,967	40.3	2,618,468	2,207	13.8	30,411	347	15.5	5,385	582	33.5	19,482
Bremer	62,708	33.5	2,102,896	48,128	28.1	1,352,425	188	12.8	2,398	234	11.2	3,618	1,287	28.1	36,240
Buchanan	95,371	24.2	2,309,638	61,952	34.1	2,158,630	323	13.	4,240	317	14.6	4,611	2,014	25.3	50,985
Buena Vista	124,912	37.3	4,658,348	84,759	42.7	3,619,192	67	10.	675	152	13.5	2,053	993	28.9	28,675
Butler	99,327	32.6	3,235,868	76,562	36.2	2,771,119	59	10.1	597	492	11.1	5,475	1,230	21.9	26,934
Calhoun	131,278	39.	5,224,701	99,662	40.5	4,016,864	131	17.6	2,311	117	15.	1,757	638	28.4	18,132
Carroll	115,688	37.8	4,388,447	69,557	32.4	2,253,661	1,227	13.9	17,053	3,487	11.5	38,178	1,877	30.8	57,780
Cass	109,736	42.3	4,645,492	38,029	35.1	1,336,701	14,169	16.1	227,385	3,187	9.5	30,343	4,434	30.8	136,796
Cedar	102,221	37.9	3,868,969	37,102	42.	1,558,152	1,694	19.5	33,071	348	15.7	5,466	10,693	26.5	282,951
Cerro Gordo	87,111	30.	2,613,118	69,180	36.	2,492,236	43	8.6	371	321	13.8	14,438	2,269	24.3	55,167
Cherokee	120,224	39.6	4,767,389	81,596	43.8	3,583,630	9	13.9	125	341	14.4	4,899	2,269	32.7	74,135
Chickasaw	60,874	24.7	1,505,957	59,847	28.5	1,706,580	53	10.6	562	1,615	12.2	19,757	2,228	19.3	43,098
Clarke	55,464	27.2	1,510,478	18,645	28.5	531,801	1,529	11.3	17,245	40	7.3	292	58	20.6	1,193
Clay	103,251	42.2	4,357,709	78,638	40.6	3,192,567	118	12.2	1,412	529	9.8	5,256	2,786	25.6	71,339
Clayton	72,004	31.2	2,249,883	62,440	39.8	2,483,988	1,406	19.3	27,171	838	17.7	14,820	8,366	32.6	273,111
Clinton	109,577	37.1	4,065,120	43,284	46.7	2,024,037	3,438	19.	65,412	1,169	17.6	20,584	7,856	31.2	245,107
Crawford	139,027	42.8	5,948,903	64,978	32.2	2,090,385	2,071	20.5	42,341	9,363	12.5	116,957	4,310	29.5	126,956
Dallas	126,104	35.9	4,537,326	54,492	41.5	2,265,549	9,711	11.6	111,580	334	12.6	4,205	431	34.2	14,735
Davis	48,990	24.9	1,217,587	30,586	13.2	405,587	2,093	8.7	18,317	28	5.7	161	17	21.6	368
Decatur	63,657	29.	1,849,250	21,967	25.	543,117	3,604	11.7	42,112	49	9.1	448	16	20.	321
Delaware	84,596	26.8	2,266,024	53,254	36.5	1,947,882	144	14.7	2,122	329	15.8	5,214	6,912	32.1	222,045

TABLE NO. 2—Continued

Counties	Corn			Oats			Winter Wheat			Spring Wheat			Barley		
	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels	Acres	Bushels per acre	Total bushels
Des Moines	60,838	29.9	1,819,151	27,793	28.6	794,898	4,077	13.	53,121	303	9.9	3,012	125	25.7	3,206
Dickinson	54,572	34.9	1,907,662	48,235	38.	1,831,006	122	12.4	1,521	595	17.1	10,208	1,451	26.1	37,900
Dubuque	62,160	28.6	1,783,112	46,890	33.7	1,579,556	534	18.8	10,054	1,004	17.7	17,776	3,161	30.3	95,929
Emmet	58,800	35.4	2,094,779	52,791	40.5	2,136,177	10	10.	100	124	10.8	1,341	783	27.2	21,279
Fayette	83,192	31.4	2,507,215	69,686	34.4	2,399,581	285	15.	4,267	1,023	14.1	14,488	4,986	31.7	158,265
Floyd	81,152	26.8	2,176,023	71,913	31.4	2,255,516	128	5.6	718	652	12.2	7,910	1,795	22.2	39,742
Franklin	105,398	36.3	3,831,549	80,783	40.6	3,281,654	52	11.9	620	341	12.3	4,186	2,140	27.2	58,236
Fremont	124,802	36.9	4,615,002	10,812	26.1	284,389	9,834	16.1	158,017	707	8.7	6,163	113	27.1	3,070
Greene	127,137	34.9	4,435,948	64,189	38.2	2,453,025	1,651	15.6	25,845	66	14.2	939	696	25.2	17,512
Grundy	101,549	38.2	3,883,132	73,597	40.7	2,998,159	150	10.4	1,574	155	17.3	2,687	2,798	32.2	90,202
Guthrie	102,945	35.	3,607,637	48,478	34.9	1,691,149	3,918	14.7	67,893	1,431	10.6	15,206	1,128	25.9	29,108
Hamilton	123,576	33.4	4,126,988	90,382	39.7	3,590,943	187	13.9	2,605	198	15.2	3,012	332	28.6	9,502
Hancock	97,863	35.1	3,434,842	87,552	35.8	3,136,907	33	9.7	320	1,555	7.	11,029	2,553	21.	53,617
Hardin	106,951	35.8	3,832,852	70,834	37.4	2,652,276	175	9.	1,569	551	10.6	5,838	1,345	27.8	37,459
Harrison	148,179	34.8	5,152,782	25,219	30.	756,583	12,222	18.4	225,362	13,997	11.2	156,317	1,706	28.7	49,098
Henry	65,980	32.4	2,137,632	27,991	32.5	909,474	2,106	14.7	31,066	75	14.4	1,080	37	19.4	718
Howard	48,262	25.1	1,214,365	56,454	26.7	1,512,647	139	8.4	1,175	806	11.3	9,136	4,861	19.5	95,201
Humboldt	86,597	36.9	3,192,133	67,299	39.3	2,647,991	83	9.2	766	216	15.1	3,281	1,022	32.7	33,403
Ida	90,194	40.8	3,679,589	55,128	39.3	2,165,195	102	20.8	2,120	1,504	10.9	16,391	3,300	33.2	109,792
Iowa	88,778	35.3	3,136,840	42,324	32.4	1,372,684	1,458	19.1	27,859	705	13.3	9,406	1,386	29.1	40,394
Jackson	54,923	36.8	2,021,567	29,395	32.9	968,493	1,581	18.2	27,743	933	15.4	14,408	2,277	29.6	67,336
Jasper	144,724	40.7	5,907,911	58,108	38.6	2,245,811	4,984	13.2	66,206	2,266	19.6	44,473	374	29.3	10,985
Jefferson	59,238	32.5	1,929,257	25,341	30.1	764,264	1,942	14.7	28,652	206	10.1	2,075	52	28.8	1,501
Johnson	88,380	38.4	3,389,355	40,755	33.8	1,375,883	1,358	18.5	25,163	543	14.7	7,991	950	32.9	31,282
Jones	70,437	35.5	2,501,400	32,984	36.4	1,201,194	314	17.4	5,484	468	15.7	7,377	4,805	33.3	159,904
Keokuk	99,462	32.8	3,265,254	46,469	24.5	1,140,132	1,247	13.3	16,604	1,573	11.2	17,683	121	22.6	2,735
Kossuth	157,512	35.3	5,566,204	143,618	38.8	5,586,291	99	6.6	652	526	12.	6,295	2,313	30.1	69,635
Lee	49,140	24.2	1,191,504	19,266	21.	403,833	4,904	10.7	52,796	37	7.5	277	285	18.9	5,388
Linn	103,347	39.7	4,107,524	54,719	40.2	2,199,142	676	17.3	11,732	679	17.9	12,167	1,561	30.8	59,618
Louisa	58,822	34.	2,002,253	25,561	30.6	783,664	5,831	15.5	90,864	30	8.1	244	105	25.1	2,638
Lucas	47,900	27.5	1,316,803	18,947	26.3	4,498,446	1,539	9.9	15,270	117	8.9	1,044	17	15.4	270

Lyon	119,521	37.5	4,482,918	102,396	42.3	4,334,719	115	18.6	2,130	1,156	9.	10,487	7,095	26.2	186,053
Madison	90,271	33.3	3,006,459	30,177	33.1	997,609	5,485	14.9	81,921	844	17.5	14,802	1,527	31.3	27,802
Mahaska	104,063	34.4	3,584,061	47,469	28.9	1,372,346	2,773	15.3	42,679	823	12.9	10,608	290	25.4	7,370
Marion	90,462	39.2	3,542,746	29,855	32.9	983,012	11,433	16.2	185,501	1,778	13.8	24,469	390	26.5	10,317
Marshall	111,794	43.6	4,877,510	61,718	40.1	2,476,633	905	13.9	12,603	610	14.5	8,872	426	30.8	13,959
Mills	94,264	47.6	4,485,675	15,640	34.5	539,242	8,851	15.5	136,766	2,195	8.6	18,954	554	31.3	17,314
Mitchell	62,343	33.	2,056,286	81,923	31.9	2,613,097	29	18.7	544	1,204	11.7	14,087	2,646	26.8	69,086
Monona	150,374	35.1	5,289,294	31,453	29.	912,515	24,547	20.	491,653	13,226	13.4	178,343	1,514	19.4	29,495
Monroe	40,991	21.6	884,743	12,834	23.	295,684	1,943	10.9	21,284	329	8.3	2,749	58	18.4	1,065
Montgomery	91,595	38.9	3,571,983	20,081	34.9	702,099	12,560	17.3	217,256	2,614	9.3	24,312	376	29.8	11,204
Muscatine	70,221	40.5	2,849,859	22,668	37.9	858,974	3,379	20.3	68,397	545	16.	8,705	5,199	21.7	128,445
O'Brien	108,829	43.8	4,765,614	82,668	45.3	3,751,447	141	12.5	1,803	315	9.9	3,136	7,382	27.6	203,940
Osceola	73,304	33.4	2,448,903	71,921	41.8	3,013,425	----	----	----	20	15.4	327	3,654	27.2	99,354
Page	106,481	38.4	4,088,699	20,138	27.5	553,718	12,623	15.5	196,273	1,181	9.7	11,394	160	24.2	3,875
Palo Alto	82,771	40.7	3,373,045	67,106	43.6	2,928,596	44	10.4	458	104	12.1	1,255	802	26.6	21,327
Plymouth	185,365	38.4	7,115,233	97,946	39.9	3,915,502	1,850	19.5	35,250	32,316	11.7	379,041	5,424	20.7	112,674
Pocahontas	120,506	36.1	4,356,620	96,934	42.3	4,108,009	188	9.	1,685	117	11.4	1,339	839	27.6	23,192
Polk	97,756	38.4	3,756,519	40,911	47.6	1,946,302	14,991	14.8	222,582	1,488	13.3	19,789	42	22.	925
Pottawattamie	197,332	40.5	8,011,258	46,060	34.9	1,607,895	22,699	14.3	323,898	5,799	10.9	63,390	7,270	30.2	219,676
Poweshiek	107,192	36.2	3,878,025	45,321	35.6	1,614,775	482	16.8	8,075	792	12.5	9,930	1,398	28.9	40,379
Ringgold	72,350	27.6	1,994,944	26,026	27.4	712,676	2,656	9.	24,474	94	7.	652	104	11.7	1,220
Sac	113,089	36.3	4,110,674	72,968	41.6	3,033,215	44	11.3	495	26	10.6	273	3,724	25.2	93,988
Scott	73,777	37.5	2,769,580	24,988	40.3	1,006,377	8,592	23.6	202,770	805	13.8	11,121	20,915	30.2	631,133
Shelby	123,528	27.3	3,372,162	50,136	34.3	1,722,719	1,253	18.9	23,682	4,117	10.3	42,271	8,293	28.5	236,454
Sioux	147,516	48.6	7,165,221	105,468	41.1	4,614,536	1,132	19.	20,452	11,155	12.2	172,256	14,896	29.1	442,183
Story	135,351	37.3	5,052,031	73,290	44.9	3,290,477	591	12.8	7,574	176	14.3	2,518	43	32.2	1,385
Tama	117,096	32.6	3,811,528	66,217	34.7	2,302,445	454	16.2	7,348	1,904	14.5	27,708	7,893	33.	260,436
Taylor	91,090	32.5	2,965,310	27,547	29.4	810,758	4,410	12.2	53,723	142	8.1	1,145	295	25.4	7,501
Union	63,799	27.9	1,783,412	21,758	28.8	616,365	1,383	9.4	13,082	163	9.	1,471	154	23.	3,547
Van Buren	48,022	25.5	1,203,374	17,550	20.5	360,428	2,789	9.9	27,828	28	8.	205	10	13.	130
Wapello	59,508	26.	1,546,828	20,436	27.1	555,310	3,968	14.5	57,410	102	7.5	767	66	19.	1,250
Warren	88,698	28.9	2,569,524	23,769	30.7	730,730	14,924	13.9	207,479	592	11.3	6,680	419	24.9	10,472
Washington	90,434	42.8	3,877,063	41,242	33.6	1,384,907	1,744	15.	26,162	278	13.6	3,787	273	22.8	6,221
Wayne	65,382	23.3	1,521,460	25,584	26.5	677,411	2,118	7.2	15,334	----	----	----	48	12.4	595
Webster	142,201	35.1	4,989,169	113,125	38.9	4,300,136	399	14.1	5,608	1,039	15.	15,634	850	14.7	12,514
Winnebago	58,937	31.	1,828,289	52,049	35.4	1,843,937	28	12.	336	3,357	13.5	45,415	4,494	23.3	104,870
Winneshiek	77,785	30.2	2,347,213	70,146	29.9	2,096,520	300	12.9	3,872	4,745	11.9	56,294	12,403	23.9	296,074
Woodbury	192,364	35.1	6,748,740	70,296	34.3	2,415,107	5,235	13.4	69,969	8,141	13.9	113,871	2,078	30.8	64,069
Worth	46,745	31.1	1,455,301	59,530	29.2	1,742,143	10	16.5	165	1,996	12.8	25,587	3,896	19.9	77,723
Wright	114,535	34.2	3,922,453	86,657	36.1	3,120,212	112	9.4	1,054	366	10.3	4,841	1,565	25.8	40,443
Total	9,479,030	35.	331,582,186	5,199,269	36.5	189,876,501	296,220	15.6	4,621,073	172,421	12.2	2,111,771	265,048	28.2	7,467,049


CORN
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 351,582,186 Bushels
Average per Acre 35. Bushels
FARM VALUE Dec. 1, 1916 81¢ per bu. TOTAL $284,581,571
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
CLINTON
CEDAR
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
MUSCATINE
SCOTT
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VANBUREN
LEE



OATS

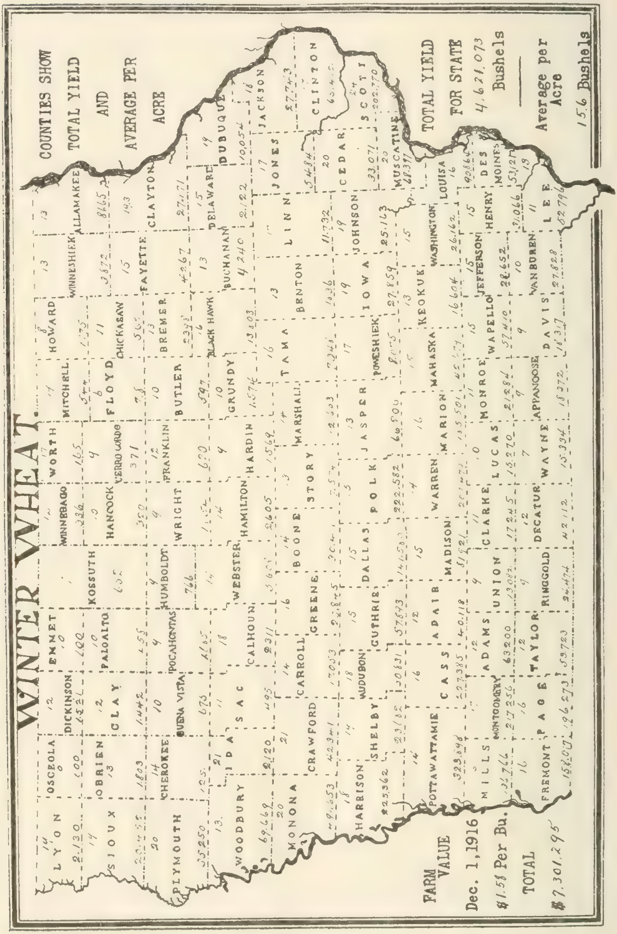
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE

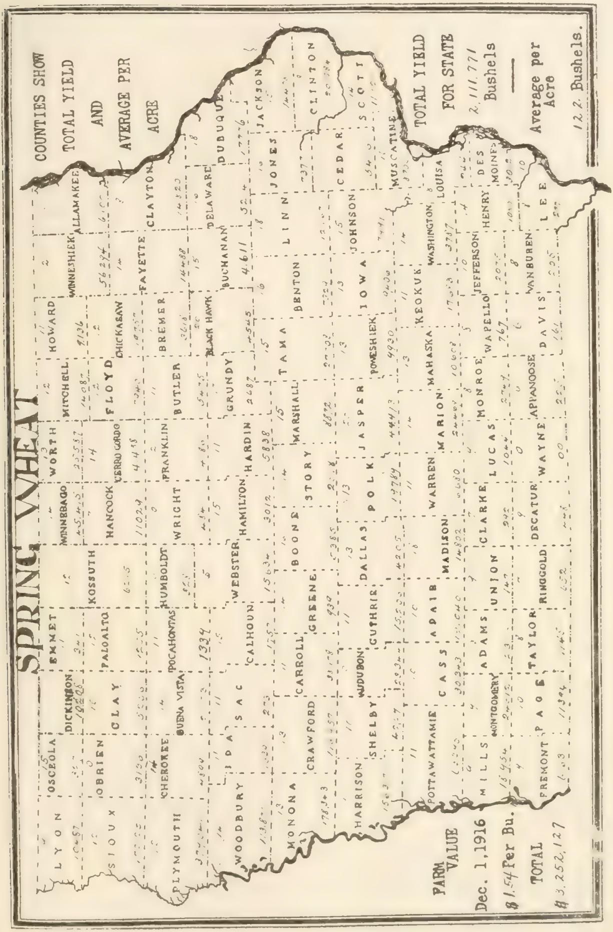
TOTAL YIELD FOR STATE 189 876.501 Bushels

Average per Acre 36.5 Bushels

FARM VALUE DEC. 1, 1916 49¢ per bu. TOTAL $93,039,485

LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
CLINTON
CEDAR
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


WINTER WHEAT
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 4,621,073 Bushels
Average per Acre 15.6 Bushels
FARM VALUE Dec. 1, 1916 $1.58 Per Bu.
TOTAL $7,301,295
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
CLINTON
CEDAR
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
MUSCATINE
SCOTT
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VANBUREN
LEE


SPRING WHEAT
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 2,111,771 Bushels
Average per Acre 12.2 Bushels.
FARM VALUE Dec. 1, 1916 $1.54 Per Bu.
TOTAL $3,252,127
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
CLINTON
CEDAR
SCOTT
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE

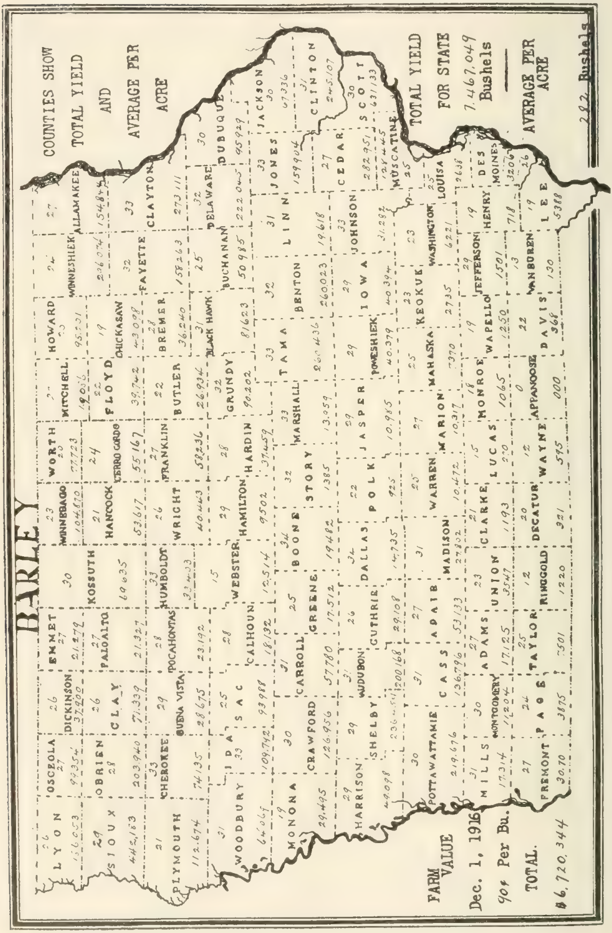

BARLEY
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 7,467,049 Bushels
AVERAGE PER ACRE 29.2 Bushels
FARM VALUE Dec. 1, 1916 90¢ Per Bu.
TOTAL. $6,720,344
LYON 26 156,053
OSCEOLA 27 94,354
DICKINSON 26 37,900
EMMET 27 21,279
KOSSUTH 30 69,635
WINNEBAGO 23 104,870
WORTH 20 77,723
MITCHELL 19,056
HOWARD 95,331
WINNESHIEK 24 236,074
ALLAMAKEE 27 154,845
SIOUX 29 442,183
OBRIEN 28 203,940
CLAY 26 71,339
PALO ALTO 27 21,327
HUMBOLDT 33 33,403
HANCOCK 21 53,617
CERRO GORDO 24 55,167
FLOYD 22 39,742
CHICKASAW 19 43,098
FAYETTE 32 158,263
CLAYTON 33 273,111
PLYMOUTH 21 112,674
CHEROKEE 33 74,135
BUENA VISTA 29 28,675
POCAHONTAS 28 23,192
WRIGHT 26 40,463
FRANKLIN 27 58,236
BUTLER 22 26,934
BREMER 28 36,240
BLACK HAWK 31 81,623
BUCHANAN 25 50,985
DELAWARE 32 222,045
DUBUQUE 30 95,929
WOODBURY 31 64,065
IDA 33 109,742
SAC 25 93,988
CALHOUN 28 18,132
WEBSTER 15 12,514
HAMILTON 29 9502
HARDIN 28 37,459
GRUNDY 32 90,202
TAMA 33 260,436
BENTON 32 260,023
LINN 31 19,618
JONES 33 159,904
JACKSON 30 67,336
CLINTON 31 245,107
MONONA 19 29,495
CRAWFORD 30 126,956
CARROLL 31 57,780
GREENE 25 17,512
BOONE 34 19,482
STORY 32 1385
MARSHALL 33 13,059
JOHNSON 33 31,282
IOWA 29 40,394
CEDAR 27 282,951
SCOTT 30 631,133
MUSCATINE 25 124,445
HARRISON 29 49,098
SHELBY 29 236,454
AUDUBON 31 200,168
GUTHRIE 26 29,108
DALLAS 34 14,735
POLK 22 925
JASPER 29 10,985
POWESHIEK 29 40,379
POTTAWATTAMIE 30 219,676
CASS 31 136,796
ADAIR 27 53,133
MADISON 31 27,802
WARREN 25 10,472
MARION 27 10,317
MAHASKA 25 7370
KEOKUK 23 2735
WASHINGTON 23 6221
LOUISA 25 2638
MILLS 31 17,314
MONTGOMERY 30 11,204
ADAMS 27 17,125
UNION 23 3547
CLARKE 21 1193
LUCAS 15 220
MONROE 18 1065
WAPELLO 19 1250
JEFFERSON 29 1501
HENRY 19 718
DES MOINES 26 3206
FREMONT 27 30,70
PAGE 24 3875
TAYLOR 25 7501
RINGGOLD 12 1220
DECATUR 20 321
WAYNE 12 595
APPANOOSE 0 000
DAVIS 22 368
VAN BUREN 13 130
LEE 19 5388

TABLE NO. 3.

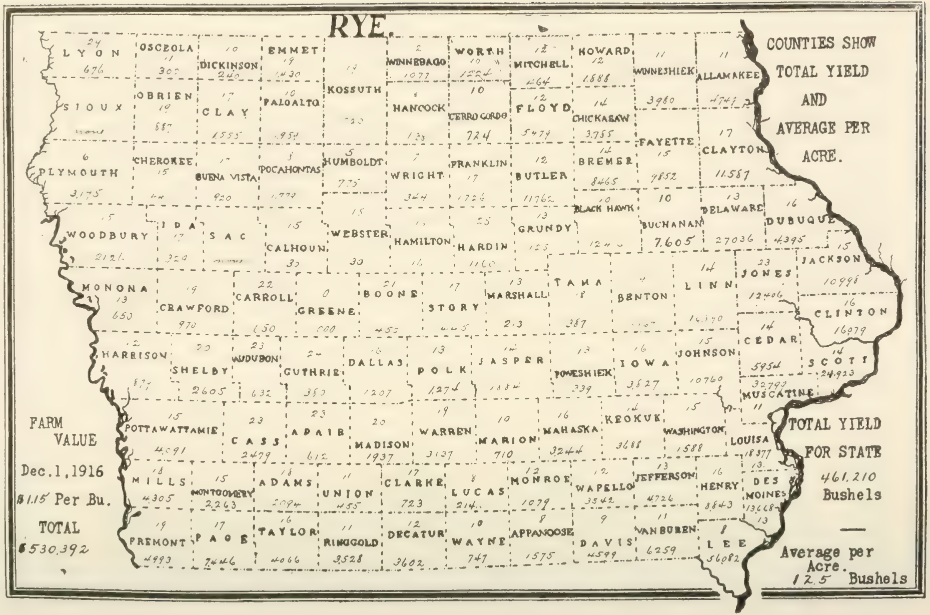
Acreage, yield per acre and total yield of rye, tame hay, wild hay, alfalfa, potatoes and flax seed, by counties for year 1916.

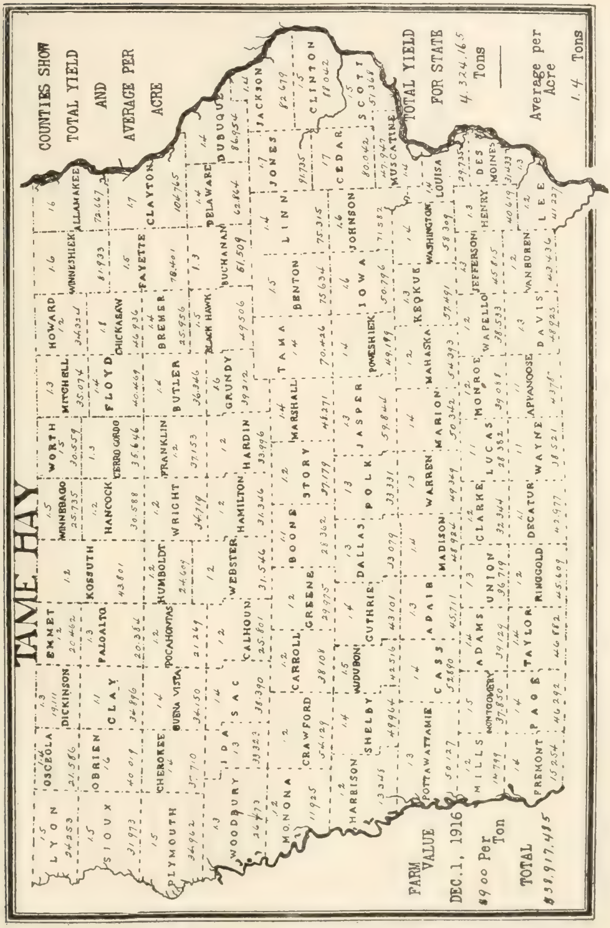
Counties	Rye			Hay (tame)			Hay (wild)			Alfalfa		Potatoes			Flax Seed	
	Acres	Bushels per acre	Total bushels	Acres	Tons per acre	Total tons	Acres	Tons per acre	Total tons	Acres	Total tons	Acres	Bushels per acre	Total bushels	Acres	Total bushels
Adair	27	22.6	612	35,474	1.3	45,711	2,365	1.6	3,915	185	472	1,108	40.9	45,385	-------	-------
Adams	117	17.8	2,094	28,280	1.4	39,129	1,468	1.6	2,392	726	1,732	444	60.3	26,898	-------	-------
Allamakee	448	10.6	4,749	44,243	1.6	72,667	1,190	1.4	1,638	16	43	989	53.	52,438	72	723
Appanoose	204	7.7	1,575	40,588	1.1	43,787	590	1.4	860	43	81	266	33.6	8,924	4	35
Audubon	28	22.6	632	27,774	1.5	42,516	1,977	1.9	3,846	1,305	3,532	600	58.4	35,023	-------	-------
Benton	439	13.8	6,067	48,069	1.5	75,634	2,223	1.1	2,493	126	252	979	51.5	50,407	-------	-------
Black Hawk	1,210	10.3	12,416	33,500	1.5	49,506	7,719	1.2	9,462	105	238	1,437	55.2	79,231	8	15
Boone	21	21.4	450	25,048	1.1	28,362	7,519	1.	7,486	394	825	728	32.5	23,668	-------	-------
Bremer	620	13.6	8,465	18,475	1.4	25,956	18,715	1.2	22,685	53	143	1,402	47.3	66,306	-------	-------
Buchanan	778	9.8	7,605	39,682	1.3	51,509	11,487	1.	11,921	17	33	844	46.7	39,424	4	30
Buena Vista	53	17.3	920	24,516	1.4	34,150	10,923	1.	12,261	736	1,512	1,183	37.6	44,541	52	479
Butler	969	12.1	11,762	26,798	1.4	36,346	10,447	1.2	12,428	10	13	1,216	43.	53,137	10	100
Calhoun	2	15.	30	20,845	1.2	25,801	4,954	1.	5,119	264	612	486	46.8	22,766	44	295
Carroll	29	22.4	650	29,491	1.2	38,108	8,843	1.4	11,961	613	1,315	1,596	58.6	93,591	-------	-------
Cass	108	22.9	2,479	37,894	1.4	52,890	1,134	1.6	1,787	1,167	2,806	1,135	46.5	52,766	-------	-------
Cedar	432	13.8	5,954	46,488	1.7	80,042	157	.9	151	196	548	866	51.8	45,018	-------	-------
Cerro Gordo	74	9.8	724	28,482	1.3	35,646	13,904	.8	10,308	97	185	1,076	46.6	50,148	309	1,875
Cherokee	29	15.2	440	25,761	1.4	37,710	8,324	1.2	9,888	2,537	5,833	1,213	33.	40,307	-------	-------
Chickasaw	267	14.2	3,785	25,780	1.8	46,936	15,100	1.2	18,073	1	3	660	40.5	26,757	87	765
Clarke	42	17.2	723	26,683	1.2	32,344	63	1.3	81	55	111	198	43.2	8,556	-------	-------
Clay	91	17.	1,555	23,051	1.8	34,896	13,019	1.2	15,063	676	1,831	592	45.4	26,880	183	1,688
Clayton	685	16.9	11,587	60,041	1.7	104,765	1,082	1.4	1,479	76	188	1,691	46.6	78,775	-------	-------
Clinton	1,094	15.6	16,079	59,639	1.5	88,042	1,725	1.2	2,086	468	1,386	805	46.2	37,264	-------	-------
Crawford	49	19.4	970	45,610	1.2	54,129	5,217	1.4	7,475	4,859	12,190	1,487	59.8	88,920	-------	-------
Dallas	76	15.9	1,207	26,307	1.3	33,079	2,859	1.1	3,258	674	1,540	422	51.1	21,755	-------	-------
Davis	513	8.9	4,599	47,526	1.3	48,925	12	1.5	18	35	100	405	55.7	22,576	-------	-------
Decatur	295	12.2	3,602	38,582	1.1	42,977	97	.8	85	205	422	144	52.1	7,484	-------	-------

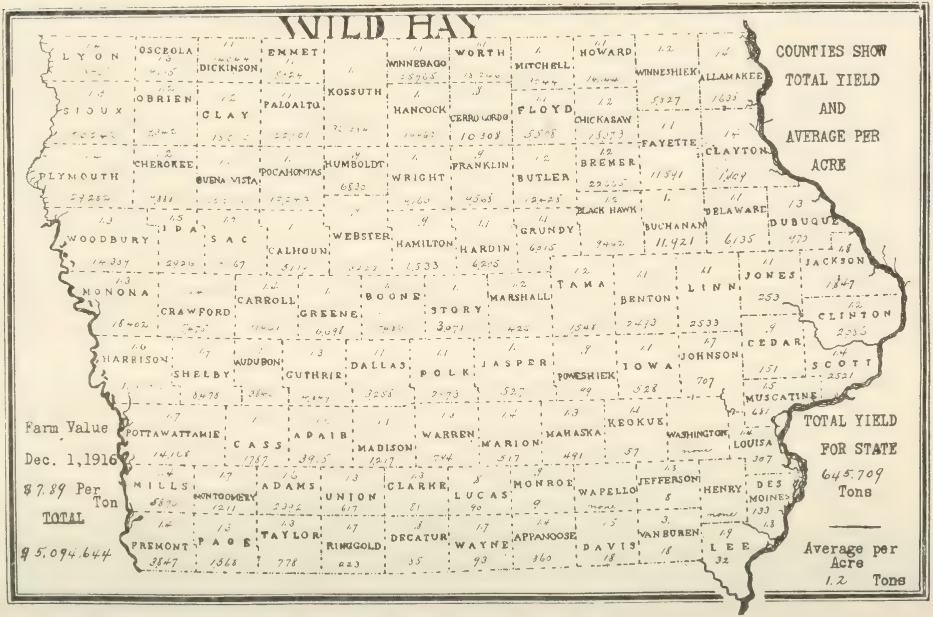
TABLE NO. 3—Continued

Counties	Rye			Hay (tame)			Hay (wild)			Alfalfa		Potatoes			Flax Seed	
	Acres	Bushels per acre	Total bushels	Acres	Tons per acre	Total tons	Acres	Tons per acre	Total tons	Acres	Total tons	Acres	Bushels per acre	Total bushels	Acres	Total bushels
Delaware	2,123	12.7	27,036	44,961	1.4	62,864	5,846	1.1	6,135	54	112	956	42.8	40,936	-------	-------
Des Moines	1,040	13.1	13,668	24,414	1.3	31,433	74	1.8	133	553	1,207	753	54.3	40,907	-------	-------
Dickinson	22	10.2	240	13,914	1.3	19,111	12,197	1.1	14,044	705	1,566	311	41.8	13,004	427	3,681
Dubuque	278	15.8	4,395	61,703	1.4	86,954	739	1.3	970	107	256	1,994	56.	11,730	-------	-------
Emmet	74	19.3	1,430	17,001	1.2	20,462	7,883	1.1	8,324	67	122	381	38.6	14,712	214	1,576
Fayette	669	14.7	9,852	53,436	1.5	78,401	10,544	1.1	11,591	16	32	1,189	54.5	64,743	32	224
Floyd	444	12.3	5,479	29,678	1.4	40,469	4,753	1.1	5,508	16	30	1,244	39.5	49,077	163	1,132
Franklin	103	16.7	1,726	29,613	1.2	37,153	9,770	.9	9,568	39	85	1,377	45.4	62,575	108	808
Fremont	264	18.9	4,993	10,812	1.4	15,254	2,743	1.4	3,847	10,384	30,628	803	61.2	49,131	-------	-------
Greene	-------	-------	-------	25,296	1.2	29,975	6,403	1.	6,698	401	772	420	48.8	20,501	30	750
Grundy	10	12.5	125	25,297	1.6	39,212	5,309	1.1	6,015	29	66	2,053	40.1	82,253	9	70
Guthrie	16	23.8	380	31,524	1.4	43,101	3,679	1.3	4,849	336	856	508	47.6	24,020	-------	-------
Hamilton	1	16.	16	25,340	1.2	31,346	6,599	.9	6,533	185	361	703	42.2	29,703	-------	-------
Hancock	77	8.3	638	24,955	1.2	30,588	19,193	1.	19,962	80	159	737	48.4	35,661	193	1,912
Hardin	47	24.7	1,160	27,283	1.2	33,996	5,860	1.1	6,205	109	308	801	42.6	34,138	-------	-------
Harrison	76	11.6	879	11,045	1.2	13,348	7,293	1.6	11,913	16,352	40,988	795	52.5	41,786	-------	-------
Henry	555	15.9	8,843	30,700	1.3	40,619	-------	-------	-------	243	708	323	65.4	21,115	-------	-------
Howard	152	12.4	1,888	28,982	1.2	34,324	13,330	1.1	14,144	3	9	819	40.3	33,064	447	2,246
Humboldt	161	4.8	775	19,723	1.2	24,609	6,994	.9	6,830	173	412	385	55.4	21,354	73	690
Ida	19	17.3	329	26,080	1.3	33,323	1,945	1.5	2,926	1,524	3,606	736	45.3	33,325	6	40
Iowa	234	16.4	3,327	32,156	1.6	50,796	486	1.1	528	157	411	1,041	53.8	55,967	-------	-------
Jackson	719	15.3	10,998	59,856	1.4	82,679	1,056	1.8	1,847	177	642	1,155	37.3	43,117	-------	-------
Jasper	134	14.	1,884	45,087	1.3	59,844	509	1.	527	231	547	737	42.7	31,504	-------	-------
Jefferson	359	13.1	4,726	34,573	1.3	45,815	6	1.3	8	25	86	481	42.6	20,530	-------	-------
Johnson	729	14.8	10,760	46,063	1.6	71,582	427	1.7	707	236	660	891	62.7	56,068	-------	-------
Jones	532	23.3	12,406	52,200	1.7	91,735	232	1.1	253	108	203	674	50.7	34,165	-------	-------
Keokuk	268	13.7	3,688	42,263	1.3	57,491	54	1.1	57	168	453	532	68.6	36,491	-------	-------
Kossuth	90	19.1	1,720	35,802	1.2	43,801	37,310	1.	36,384	283	793	1,406	46.9	66,057	643	6,351
Lee	6,669	8.4	56,082	35,141	1.2	41,227	17	1.9	32	355	689	1,004	53.	53,286	-------	-------
Linn	769	14.1	10,890	52,087	1.4	75,315	2,250	1.1	2,533	184	378	1,517	55.7	84,462	-------	-------
Louisa	1,468	12.5	18,377	20,250	1.4	29,735	223	1.4	307	150	253	355	74.8	26,529	-------	-------
Lucas	28	7.6	214	25,891	1.1	28,382	107	.8	90	40	81	177	74.5	13,190	-------	-------

Lyon	23	29.4	676	16,256	1.5	24.253	9,861	1.4	13,706	2,168	5,378	1,725	32.8	56,578	-----	-----
Madison	96	20.1	1,937	34,747	1.4	48,924	1,082	1.1	1,217	192	514	511	65.6	33,503	-----	-----
Mahaska	203	15.9	3,244	45,293	1.2	54,393	372	1.3	491	387	975	589	58.	34,194	-----	-----
Marion	73	9.7	710	35,604	1.4	50,342	357	1.4	517	518	570	418	37.7	15,743	-----	-----
Marshall	16	13.3	213	35,811	1.4	48,271	345	1.2	425	116	413	877	50.9	44,632	-----	-----
Mills	235	18.3	4,305	11,902	1.2	14,799	4,157	1.4	5,870	12,355	33,246	625	79.1	49,638	-----	-----
Mitchell	38	12.2	464	26,726	1.3	35,074	3,240	1.	3,244	1	3	2,482	64.2	15,946	976	7,880
Monona	52	12.5	650	9,736	1.2	11,925	13,542	1.3	18,402	13,312	32,405	2,190	20.5	14,819	-----	-----
Monroe	89	12.1	1,079	33,774	1.2	39,088	11	.9	9	50	117	249	26.8	6,661	-----	-----
Montgomery	149	15.2	2,263	25,438	1.5	37,850	706	1.7	1,211	4,448	12,744	523	67.2	35,145	-----	-----
Muscatine	2,907	11.3	32,799	26,593	1.4	47,947	464	1.5	681	753	2,191	1,302	57.7	75,127	-----	-----
O'Brien	46	19.1	887	24,390	1.6	40,019	7,437	1.2	9,342	1,187	2,884	1,212	38.2	47,257	119	1,791
Osceola	27	11.2	302	15,441	1.4	21,586	7,104	1.3	9,115	166	423	833	29.6	24,674	199	1,909
Page	428	17.4	7,446	32,929	1.4	46,292	1,151	1.3	1,568	3,262	9,367	112	85.9	37,960	-----	-----
Palo Alto	196	9.9	1,959	16,035	1.3	20,384	20,739	1.1	22,801	198	389	164	10.9	19,021	516	3,853
Plymouth	507	6.2	3,175	23,566	1.5	34,962	20,110	1.4	29,282	1,200	28,902	2,048	38.1	78,150	-----	-----
Pocahontas	97	18.3	1,779	17,403	1.2	21,269	11,691	1.	12,242	155	294	630	44.2	27,844	128	1,947
Polk	100	12.7	1,274	25,487	1.3	33,331	2,545	1.1	2,873	936	2,029	973	56.1	54,570	-----	-----
Pottawattamie	269	15.2	4,091	38,060	1.3	50,127	8,439	1.7	14,168	19,921	54,119	2,252	49.7	111,983	-----	-----
Poweshiek	26	13.	339	35,033	1.4	49,199	102	.9	99	168	435	726	42.7	31,007	-----	-----
Ringgold	296	11.4	3,528	38,273	1.2	45,609	132	1.7	223	79	185	213	63.4	13,528	-----	-----
Sac	-----	-----	-----	28,436	1.4	38,390	4,797	1.2	5,767	404	876	623	45.7	28,480	50	100
Scott	1,732	14.4	24,923	33,340	1.5	51,368	1,772	1.4	2,521	1,333	4,291	3,436	52.	178,663	-----	-----
Shelby	130	20.	2,605	36,992	1.4	49,964	4,344	1.9	8,478	3,934	9,430	1,057	17.4	50,100	-----	-----
Sioux	-----	-----	-----	21,202	1.5	31,973	15,236	1.3	20,242	5,218	12,568	1,324	43.2	57,307	21	294
Story	27	16.5	445	30,313	1.2	37,179	3,022	1.	3,071	336	656	261	32.2	7,758	-----	-----
Tama	21	18.4	387	48,485	1.4	70,426	1,270	1.2	1,548	128	268	1,099	44.1	48,498	-----	-----
Taylor	262	15.5	4,066	33,757	1.4	46,882	594	1.3	778	794	1,874	489	70.6	34,555	-----	-----
Union	40	11.3	455	27,841	1.3	36,719	464	1.3	617	92	211	524	68.2	55,750	-----	-----
Van Buren	573	10.9	6,259	37,713	1.2	43,436	6	3.	18	309	648	156	60.1	9,386	-----	-----
Wapello	304	11.6	3,542	32,196	1.2	38,533	-----	-----	-----	212	511	637	60.4	38,526	-----	-----
Warren	162	19.4	3,137	37,667	1.3	49,349	589	1.3	794	213	510	352	47.7	16,790	-----	-----
Washington	108	14.7	1,588	40,790	1.4	58,309	0	-----	0	113	278	576	72.4	41,685	-----	-----
Wayne	76	9.8	747	34,468	1.1	38,521	54	1.7	93	68	136	74	55.	4,070	-----	-----
Webster	2	15.	30	26,296	1.2	31,546	13,908	.9	13,222	463	878	644	43.4	28,003	98	1,039
Winnebago	88	12.2	1,077	17,101	1.5	25,735	22,727	1.1	25,765	36	71	881	42.5	37,456	492	4,760
Winneshiek	356	10.9	3,980	50,426	1.6	81,933	4,838	1.2	5,827	26	40	1,125	57.4	64,589	358	2,770
Woodbury	146	14.5	2,126	20,988	1.3	26,473	10,769	1.3	14,389	18,262	49,687	1,676	81.6	156,716	-----	-----
Worth	112	10.1	1,224	20,536	1.5	30,559	15,902	1.1	18,246	26	86	658	13.5	28,690	1,528	12,818
Wright	44	7.4	341	28,359	1.2	34,719	8,876	1.	9,160	83	234	642	52.	33,457	55	550
Total	36,886	12.5	461,210	3,153,156	1.4	4,324,165	549,699	1.2	645,709	142,753	396,323	88,691	46.6	4,132,494	7,658	65,196


RYE.
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE.
LYON 24 676
OSCEOLA 11 307
DICKINSON 10 240
EMMET 19 1,430
KOSSUTH 19 720
WINNEBAGO 2 1077
WORTH 10 1224
MITCHELL 12 464
HOWARD 12 1,888
WINNESHIEK 11 3980
ALLAMAKEE 11 4749
SIOUX none
OBRIEN 19 887
CLAY 17 1555
PALOALTO 10 954
HANCOCK 4 138
CERRO GORDO 10 724
FLOYD 12 5479
CHICKASAW 14 3,755
FAYETTE 15 9852
CLAYTON 17 11,587
PLYMOUTH 6 3,175
CHEROKEE 15 44
BUENA VISTA 17 920
POCAHONTAS 3 1,779
HUMBOLDT 5 775
WRIGHT 7 344
FRANKLIN 17 1726
BUTLER 12 11762
BREMER 14 8465
BLACK HAWK 10 124
BUCHANAN 10 7,605
DELAWARE 13 27036
DUBUQUE 16 4395
WOODBURY 15 2121
IDA 17 329
SAC none
CALHOUN 15 37
WEBSTER 15 30
HAMILTON 15 16
HARDIN 25 1160
GRUNDY 13 125
MONONA 13 650
CRAWFORD 19 970
CARROLL 22 650
GREENE 0 600
BOONE 21 450
STORY 17 445
MARSHALL 13 213
TAMA 8 387
BENTON 4
LINN 14 14,370
JONES 23 12406
JACKSON 15 10998
CLINTON 16 16079
HARRISON 12 871
SHELBY 20 2605
AUDUBON 23 632
GUTHRIE 24 380
DALLAS 16 1207
POLK 13 1,274
JASPER 14 1884
POWESHIEK 13 339
IOWA 16 3827
JOHNSON 15 10760
CEDAR 14 5954
SCOTT 14 24,923
MUSCATINE 11 32799
POTTAWATTAMIE 15 4091
CASS 23 2479
ADAIR 23 612
MADISON 20 1937
WARREN 19 3137
MARION 10 710
MAHASKA 16 3244
KEOKUK 14 3688
WASHINGTON 15 1588
LOUISA 13. 18377
MILLS 18 4305
MONTGOMERY 15 2,263
ADAMS 18 2094
UNION 11 455
CLARKE 17 723
LUCAS 8 214
MONROE 12 1079
WAPELLO 12 3542
JEFFERSON 13 4726
HENRY 16 8843
DES MOINES 13 13,668
FREMONT 19 4993
PAGE 17 7446
TAYLOR 16 4066
RINGGOLD 11 3528
DECATUR 12 3602
WAYNE 10 747
APPANOOSE 8 1575
DAVIS 9 4599
VAN BUREN 11 6259
LEE 8 56082
FARM VALUE
Dec.1,1916
$1.15 Per Bu.
TOTAL
$530,392
TOTAL YIELD FOR STATE
461,210 Bushels
Average per Acre.
12.5 Bushels


TAME HAY
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
TOTAL YIELD FOR STATE 4,324,165 Tons
Average per Acre 1.4 Tons
FARM VALUE DEC. 1, 1916 $9.00 Per Ton
TOTAL $38,917,485
LYON 1.5 24253
OSCEOLA 1.4 21586
DICKINSON 1.3 19111
EMMET 1.2 20462
KOSSUTH 1.2 43801
WINNEBAGO 1.5 25735
WORTH 1.5 30559
MITCHELL 1.3 35074
HOWARD 1.2 34332
WINNESHIEK 1.6 81933
ALLAMAKEE 1.6 72667
SIOUX 1.5 31973
OBRIEN 1.6 40019
CLAY 1.1 34896
PALOALTO 1.3 20384
HANCOCK 1.2 30588
CERRO GORDO 1.3 35646
FLOYD 1.4 40469
CHICKASAW 1.8 46936
FAYETTE 1.5 78401
CLAYTON 1.7 104765
PLYMOUTH 1.5 34962
CHEROKEE 1.2 37710
BUENA VISTA 1.4 34150
POCAHONTAS 1.2 21249
HUMBOLDT 1.2 24609
WRIGHT 1.2 34719
FRANKLIN 1.2 37153
BUTLER 1.4 36346
BREMER 1.4 25956
BLACK HAWK 1.5 49506
BUCHANAN 1.3 51509
DELAWARE 1.4 62864
DUBUQUE 1.4 86954
WOODBURY 1.3 26473
IDA 1.3 39323
SAC 1.4 38390
CALHOUN 1.2 25801
WEBSTER 1.2 31546
HAMILTON 1.2 31346
HARDIN 1.2 33996
GRUNDY 1.6 39312
TAMA 1.4 70426
BENTON 1.5 75634
LINN 1.4 75315
JONES 1.7 91735
JACKSON 1.4 82679
CLINTON 1.5 88042
MONONA 1.2 11925
CRAWFORD 1.2 56129
CARROLL 1.2 38108
GREENE 1.2 29975
BOONE 1.1 28362
STORY 1.2 37179
MARSHALL 1.4 48271
IOWA 1.6 50796
JOHNSON 1.6 71582
CEDAR 1.7 80042
SCOTT 1.5 51368
MUSCATINE 1.4 47947
HARRISON 1.2 13348
SHELBY 1.4 49964
AUDUBON 1.5 42516
GUTHRIE 1.4 43101
DALLAS 1.3 33079
POLK 1.3 33331
JASPER 1.3 59842
POWESHIEK 1.4 49199
POTTAWATTAMIE 1.3 50127
CASS 1.4 52890
ADAIR 1.3 45711
MADISON 1.4 48922
WARREN 1.3 49369
MARION 1.4 50342
MAHASKA 1.2 54393
KEOKUK 1.3 57491
WASHINGTON 1.4 58309
LOUISA 1.4 29735
DES MOINES 1.3 31433
MILLS 1.2 14799
MONTGOMERY 1.5 37850
ADAMS 1.4 39129
UNION 1.3 36719
CLARKE 1.2 32344
LUCAS 1.1 28382
MONROE 1.2 39088
WAPELLO 1.2 38533
JEFFERSON 1.3 45815
HENRY 1.3 40619
LEE 1.2 41227
FREMONT 1.4 15254
PAGE 1.4 46292
TAYLOR 1.4 46882
RINGGOLD 1.2 45609
DECATUR 1.1 42977
WAYNE 1.1 38521
APPANOOSE 1.1 43781
DAVIS 1.3 48925
VAN BUREN 1.2 43436



WILD HAY

COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE

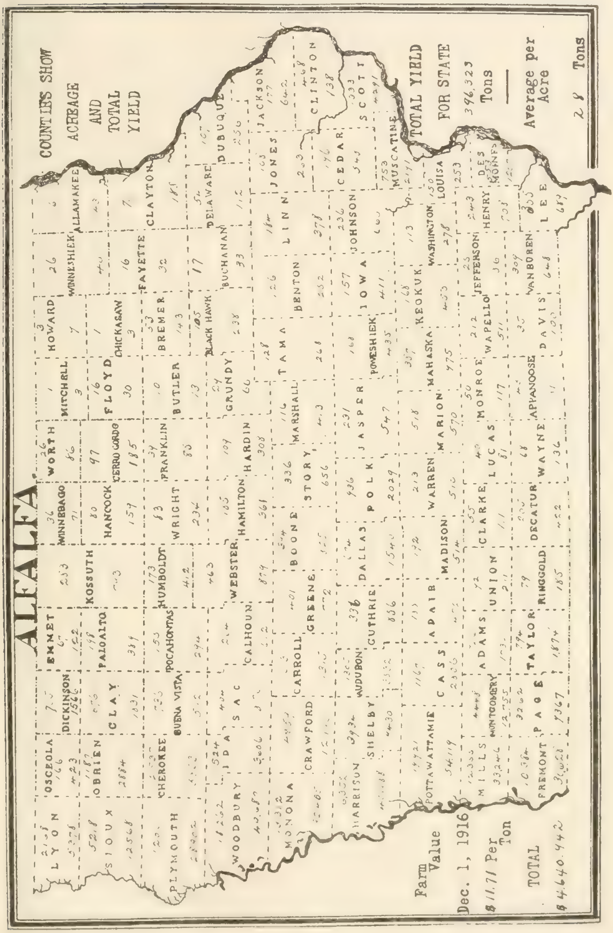
TOTAL YIELD FOR STATE 645.709 Tons

Average per Acre 1.2 Tons

Farm Value Dec. 1, 1916 $7.89 Per Ton

TOTAL $5,094.644

LYON 1.4
OSCEOLA 1.3
DICKINSON 1.1 14644
EMMET 1.1 5424
KOSSUTH 1.
WINNEBAGO 1.1 25765
WORTH 1.1 18240
MITCHELL 1. 3044
HOWARD 1.1 14.144
WINNESHIEK 1.2 5327
ALLAMAKEE 1.4 1635
SIOUX 1.3
OBRIEN 1.3
CLAY 1.2
PALOALTO 1.1
HANCOCK 1.
CERRO GORDO .8 10 308
FLOYD 1.1 5508
CHICKASAW 1.2 15073
FAYETTE 1.1 11591
CLAYTON 1.4 1469
PLYMOUTH 1.4 27282
CHEROKEE 1.2 4881
BUENA VISTA 1.
POCAHONTAS 1. 17242
HUMBOLDT .9 6830
WRIGHT 1. 4160
FRANKLIN .9 4503
BUTLER 1.2 12428
BREMER 1.2 22665
BLACK HAWK 1.2 9462
BUCHANAN 1. 11.921
DELAWARE 1.1 6135
DUBUQUE 1.3 470
JACKSON 1.8 1847
WOODBURY 1.3 14337
IDA 1.5 2926
SAC 1.2 67
CALHOUN 1. 5111
WEBSTER .9 3222
HAMILTON .9 1.533
HARDIN 1.1 6205
GRUNDY 1.1 6015
MONONA 1.3 18402
CRAWFORD 1.4 3475
CARROLL 1.2 11401
GREENE 1. 6098
BOONE 1. 7486
STORY 1. 3071
MARSHALL 1.2 425
TAMA 1.2 1548
BENTON 1.1 2473
LINN 1.1 2533
JONES 1.1 253
CLINTON 1.2 2336
CEDAR .9 151
SCOTT 1.4 2521
HARRISON 1.6
SHELBY 1.7 8478
AUDUBON 1. 384
GUTHRIE 1.3 4047
DALLAS 1.1 3256
POLK 1.1 2773
JASPER 1. 527
POWESHIEK .9 49
IOWA 1.1 528
JOHNSON 1.7 707
MUSCATINE 1.5 681
POTTAWATTAMIE 1.7 14,168
CASS 1 1787
ADAIR 39.5
MADISON 1.1 1217
WARREN 1.3 744
MARION 1.4 517
MAHASKA 1.3 491
KEOKUK 1.1 57
WASHINGTON none
LOUISA 1.4 307
MILLS 1.4 5870
MONTGOMERY 1.7 1211
ADAMS 1.6 2392
UNION 1.3 617
CLARKE 1.3 81
LUCAS .8 90
MONROE .9 9
WAPELLO none
JEFFERSON 1.3 8
HENRY none
DES MOINES 133 1.8
FREMONT 1.4 3847
PAGE 1.3 1568
TAYLOR 1.3 778
RINGGOLD 1.7 223
DECATUR .8 35
WAYNE 1.7 93
APPANOOSE 1.4 860
DAVIS 1.5 18
VAN BUREN 3. 18
LEE 1.9 32


ALFALFA
COUNTIES SHOW ACREAGE AND TOTAL YIELD
TOTAL YIELD FOR STATE 396,323 Tons
Average per Acre 2.8 Tons
Farm Value Dec. 1, 1916 $11.71 Per Ton
TOTAL $4,640,442
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
CEDAR
SCOTT
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VANBUREN
LEE

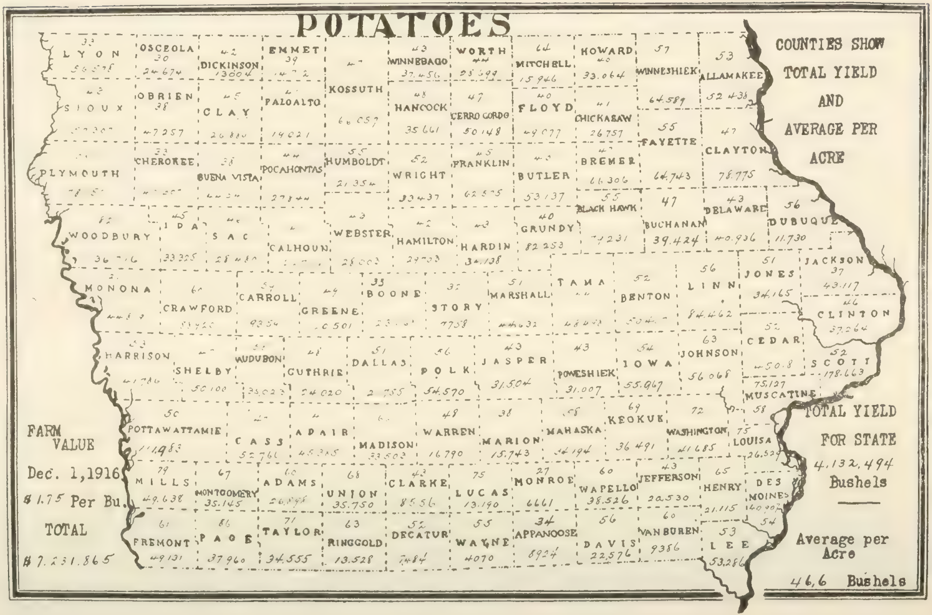

POTATOES
COUNTIES SHOW TOTAL YIELD AND AVERAGE PER ACRE
LYON 33
OSCEOLA 30 24.674
DICKINSON 42 13004
EMMET 39
KOSSUTH 66 057
WINNEBAGO 43 37.456
WORTH 44
MITCHELL 44 15 946
HOWARD 40 33.064
WINNESHIEK 57 64.589
ALLAMAKEE 53 52 438
SIOUX 42
OBRIEN 38 47257
CLAY 45 26 880
PALOALTO 14021
HANCOCK 48 35 661
CERRO GORDO 47 50 148
FLOYD 40 49 077
CHICKASAW 41 26 757
FAYETTE 55 64.743
CLAYTON 47 78.775
PLYMOUTH
CHEROKEE 33
BUENA VISTA 38
POCAHONTAS 44
HUMBOLDT 55 21 354
WRIGHT 52 33 437
FRANKLIN 45
BUTLER 53 137
BREMER 66 306
BLACK HAWK 55
BUCHANAN 47 39.424
DELAWARE 43 40.936
DUBUQUE 56 11.730
WOODBURY
IDA 45 33 325
SAC
CALHOUN
WEBSTER 43 28 003
HAMILTON
HARDIN 34.138
GRUNDY 40 82 253
JACKSON 37 43.117
JONES 51 34.165
LINN 56 84.462
TAMA
BENTON 52
MARSHALL 51
STORY 7758
BOONE 33
GREENE 49
CARROLL 9354
CRAWFORD
MONONA
CLINTON 46 37.264
CEDAR 52 450.8
SCOTT 52 178.663
JOHNSON 63 56 068
IOWA 54 55.967
POWESHIEK 43 31.007
JASPER 43 31.504
POLK 56 54.570
DALLAS 51
GUTHRIE
AUDUBON
SHELBY 50 100
HARRISON
MUSCATINE 75,127
POTTAWATTAMIE 50
CASS 52 761
ADAIR
MADISON 33 503
WARREN 48 16 790
MARION 38 15.743
MAHASKA
KEOKUK 69 36 491
WASHINGTON 72 41 685
LOUISA 75 26.529
MILLS 79 49.638
MONTGOMERY 67 35.145
ADAMS 60
UNION 68 35.750
CLARKE 8556
LUCAS 75 13.190
MONROE 27 6661
WAPELLO 60 38.526
JEFFERSON 43 20.530
HENRY 65 21.115
DES MOINES 40.907
FREMONT 61 49 131
PAGE 86 37 960
TAYLOR 71 34.555
RINGGOLD 63 13.528
DECATUR 52 7484
WAYNE 55 4070
APPANOOSE 34 8924
DAVIS 56 22,576
VAN BUREN 60 9386
LEE 53 53,286
FARM VALUE
Dec. 1,1916
$1.75 Per Bu.
TOTAL
$7.231.865
TOTAL YIELD FOR STATE
4.132.494 Bushels
Average per Acre
46,6 Bushels

TABLE NO. 4.

Number of horses, all ages, mules all ages, and number of swine July 1, 1916. Number of swine lost from hog cholera, 1916. Number dairy cows kept for milk, number other cattle not kept for milk and total number cattle all ages. Number sheep kept on farms, number shipped in for feeding. Number pounds wool clipped. Total number all varieties poultry on farms, July 1, 1916, and total number dozen eggs received by counties for the year 1916.

Counties	Horses (all ages	Mules (all ages)	Swine on farms July 1, 1916	Swine lost by cholera, 1916	Cattle			Sheep			Poultry	
					Cows and heifers kept for milk	Other cattle not kept for milk	Total cattle (all ages	Sheep all ages on farms	Sheep shipped in for feeding	Total pounds wool clipped	No. all varieties on farms July 1, 1916	No. dozen eggs received (estimated)
Adair	15,667	1,297	112,954	2,679	9,825	38,474	48,299	13,576	5,852	50,345	429,310	875,129
Adams	11,411	1,107	72,305	2,510	5,278	28,416	36,142	7,996	296	38,862	340,637	664,663
Allamakee	12,870	117	64,366	17	17,455	31,943	49,185	4,803	5	31,881	267,991	768,618
Appanoose	10,237	965	29,557	159	8,919	15,140	29,226	17,578	2,034	86,503	245,105	702,819
Audubon	12,238	374	91,500	2,557	9,579	26,166	43,662	2,953	5,478	13,029	312,406	775,175
Benton	19,638	663	134,264	3,025	12,987	49,223	62,210	3,142	1,129	17,937	448,502	1,706,699
Black Hawk	14,035	231	93,335	1,061	17,082	29,538	46,620	2,257	55	10,072	376,275	1,055,889
Boone	15,586	704	69,756	2,765	10,873	23,158	34,131	1,938	701	7,790	437,897	1,233,667
Bremer	11,385	107	57,437	126	23,835	16,398	40,131	1,042	9	6,045	347,858	969,384
Buchanan	13,911	456	87,840	5	14,315	29,225	43,540	4,398	2,692	23,971	421,367	1,178,514
Buena Vista	14,688	465	111,134	5,114	10,481	23,500	43,204	1,452	1,819	5,857	342,733	482,861
Butler	15,281	229	71,584	553	14,534	32,866	47,400	2,889	988	17,017	387,731	907,852
Calhoun	15,283	762	70,552	1,865	8,018	17,727	25,745	2,257	2,942	6,740	361,412	677,135
Carroll	14,670	612	112,486	4,051	10,958	41,964	52,922	1,268	1,051	7,047	392,259	1,044,682
Cass	15,670	1,416	119,285	5,231	8,355	42,253	51,980	15,668	13,117	81,005	396,406	1,035,018
Cedar	15,197	868	180,249	5,281	10,553	38,907	49,460	7,342	2,290	35,768	354,181	2,464,516
Cerro Gordo	13,317	228	59,918	1,368	13,009	26,447	39,146	2,265	580	13,061	292,736	752,482
Cherokee	15,043	338	130,899	4,497	7,851	40,622	48,473	3,092	3,310	3,119	296,354	870,416
Chickasaw	12,540	150	136,947	111	15,197	24,766	41,614	1,600	27	10,502	275,053	694,389
Clarke	9,764	664	44,265	537	5,466	21,921	27,454	5,130	1,018	20,741	263,209	652,394
Clay	13,572	263	96,915	2,420	10,149	34,460	44,609	2,937	1,519	20,590	290,043	811,674
Clayton	16,052	78	140,329	654	25,659	33,083	58,742	4,639	267	36,273	422,041	1,306,097
Clinton	17,411	218	145,010	889	16,802	42,165	63,876	2,149	420	13,037	401,820	1,020,374

TABLE NO. 4—Continued

Counties	Horses (all ages)	Mules (all ages)	Swine on farms July 1, 1916	Swine lost by cholera 1916	Cattle			Sheep			Poultry	
					Cows and heifers kept for milk	Other cattle not kept for milk	Total cattle (all ages)	Sheep all ages on farms	Sheep shipped in for feeding	Total pounds wool clipped	No. all varieties on farms July 1, 1916	No. dozen eggs received (estimated)
Crawford	17,458	879	169,673	9,354	12,394	48,580	68,754	2,987	1,760	3,095	489,799	1,163,953
Dallas	16,052	1,042	103,421	1,678	8,503	26,944	38,720	6,026	4,024	26,492	507,317	1,191,342
Davis	11,485	868	44,954	66	9,022	19,432	31,050	53,333	1,028	330,716	439,213	1,280,814
Decatur	11,560	991	50,235	835	7,186	23,077	32,357	8,809	1,284	33,198	345,071	906,590
Delaware	13,373	218	101,579	374	20,476	26,082	46,558	2,523	1,198	17,484	353,051	1,022,869
Des Moines	10,562	397	54,333	1,731	7,609	12,729	20,338	3,029	404	14,638	340,639	792,242
Dickinson	7,914	248	40,420	731	6,929	17,205	24,396	2,522	5,089	10,674	149,677	337,301
Dubuque	11,490	130	45,739	1,557	18,032	28,657	46,689	3,425	628	26,194	305,389	813,234
Emmet	8,836	275	41,796	1,679	7,710	15,082	23,115	282	208	4,270	153,589	429,321
Fayette	17,182	245	95,575	351	23,889	39,051	63,019	3,898	73	24,765	595,569	1,404,156
Floyd	12,907	195	59,559	470	11,029	26,410	40,674	3,581	435	19,952	294,768	877,690
Franklin	15,451	302	86,868	896	12,462	34,826	47,288	6,393	16,000	14,764	358,919	836,219
Fremont	9,527	1,725	56,997	2,836	4,786	12,762	19,514	1,561	330	11,279	242,049	720,115
Greene	15,829	771	77,924	1,829	7,553	25,598	36,060	3,069	2,103	13,731	494,989	865,378
Grundy	13,767	335	85,837	1,031	11,551	28,256	47,659	860	1,485	6,038	335,096	1,119,524
Guthrie	15,906	747	105,085	3,460	9,899	33,683	46,280	7,752	5,495	22,719	390,784	1,013,824
Hamilton	17,304	831	85,478	2,294	10,633	26,029	36,611	1,378	802	7,416	454,855	982,749
Hancock	13,903	217	55,220	284	12,129	22,900	35,029	1,407	1,405	7,486	266,531	701,645
Hardin	13,776	371	77,984	2,292	11,288	23,567	38,306	2,466	3,181	15,785	325,779	1,563,388
Harrison	14,231	1,567	101,928	4,084	9,687	22,012	31,699	1,246	9,900	56,538	405,995	1,373,057
Henry	11,401	587	57,450	977	6,637	20,922	27,562	13,886	3,208	83,995	286,528	1,166,354
Howard	10,673	105	50,921	60	14,432	26,194	39,633	3,032	---------	17,312	258,477	631,745
Humboldt	10,600	426	70,038	3,129	7,929	18,996	27,260	920	1,026	3,893	240,713	668,098
Ida	11,437	614	119,434	3,031	5,749	33,757	41,596	905	8,285	3,194	267,739	620,591
Iowa	14,491	1,151	105,694	4,250	10,049	34,001	44,050	2,866	27	10,234	425,062	940,529
Jackson	11,192	224	82,214	322	14,911	33,949	53,262	2,740	779	15,998	284,007	699,932
Jasper	19,968	763	163,912	3,207	9,853	44,120	56,609	6,646	4,513	43,899	489,854	2,173,132
Jefferson	11,724	382	49,264	506	9,578	19,494	29,072	9,207	2,019	48,423	331,176	864,335
Johnson	14,859	938	129,487	4,519	7,696	29,838	46,988	5,554	1,366	34,500	421,510	1,036,247
Jones	12,110	351	108,499	1,007	15,648	26,234	48,067	6,902	211	17,606	341,337	1,026,241
Keokuk	16,612	1,092	100,209	2,131	8,615	28,940	40,038	4,933	2,083	25,950	509,181	1,319,059

Kossuth	22,398	623	114,876	2,707	18,261	31,796	57,892	2,012	1,789	11,554	542,976	1,565,061
Lee	11,033	740	35,502	354	9,322	18,234	27,556	20,359	1,605	126,227	277,501	1,011,448
Linn	16,861	589	115,208	1,463	16,060	35,365	51,627	5,363	1,871	28,371	494,431	1,413,192
Louisa	9,978	390	61,519	6,320	4,552	22,087	27,878	1,510	191	10,353	251,313	565,735
Lucas	9,741	868	38,324	203	6,168	21,355	27,532	14,066	2,512	52,108	274,415	643,510
Lyon	14,445	80	99,693	4,886	11,449	27,000	42,123	2,355	4,274	6,102	227,808	643,868
Madison	14,275	1,057	91,882	1,712	8,431	34,770	43,116	14,236	3,060	69,167	422,423	1,127,487
Mahaska	16,784	1,329	115,969	4,311	11,082	29,081	40,163	13,961	3,537	87,122	638,362	1,873,833
Marion	13,887	635	85,781	3,063	8,534	19,947	34,370	11,714	6,944	44,689	539,130	1,276,055
Marshall	16,328	792	98,126	4,642	10,842	32,877	45,988	6,206	1,095	36,030	394,075	1,102,524
Mills	9,498	1,152	69,924	2,153	5,118	18,608	27,420	6,821	7,401	6,682	281,100	591,216
Mitchell	11,689	125	58,792	174	11,415	30,497	41,876	2,264		13,099	297,724	842,764
Monona	13,252	1,601	83,523	1,574	8,723	25,333	35,012	369			313,592	667,904
Monroe	7,654	906	29,450	33	7,159	18,825	25,984	7,363	2,574	42,274	179,797	515,492
Montgomery	10,641	1,243	98,070	2,461	6,046	26,074	45,761	2,146	387	11,246	336,058	721,147
Muscatine	10,725	615	79,802	2,372	7,405	19,102	30,412	1,433	680	8,461	294,984	1,016,716
O'Brien	15,108	287	108,013	4,761	11,820	32,053	48,058	1,396	304	7,938	295,509	816,602
Osceola	9,439	128	49,150	824	7,790	18,864	26,669	1,226		5,095	151,697	583,469
Page	12,525	1,446	103,662	3,711	6,728	30,146	40,249	3,485	2,474	19,905	376,607	937,870
Palo Alto	11,679	296	57,322	3,779	9,730	17,285	31,257	1,298	509	7,905	260,688	720,426
Plymouth	20,141	574	235,542	10,610	13,399	52,915	66,314	3,250	2,732	12,740	398,597	1,083,725
Pocahontas	12,866	1,079	67,388	3,469	8,147	18,513	28,206	1,306	1,171	6,158	357,508	867,140
Polk	14,175	1,229	64,593	3,117	10,246	20,393	30,062	5,936	2,792	10,814	432,187	1,008,299
Pottawattamie	19,780	2,458	198,043	12,164	15,295	54,028	69,599	7,807	6,543	21,121	660,480	2,150,409
Poweshiek	17,532	854	116,322	2,035	9,601	43,206	52,727	3,164	57	21,575	485,921	1,024,930
Ringgold	13,231	1,638	56,542	135	8,932	21,445	34,889	7,517	412	46,013	367,826	1,037,035
Sac	14,541	1,133	102,527	4,966	8,139	39,677	42,883	4,135	3,218	22,286	298,908	653,374
Scott	12,244	552	105,585	3,104	15,218	24,475	41,473	857	146	6,675	423,819	1,296,555
Shelby	15,900	808	149,063	3,462	8,285	49,645	61,021	4,478	6,000	9,674	434,901	1,117,597
Sioux	19,128	258	235,258	13,587	17,772	28,591	58,692	3,072	1,630	8,940	361,231	1,166,565
Story	17,047	837	81,425	4,032	9,640	23,386	23,026	2,037	386	7,631	440,251	1,200,169
Tama	19,736	587	139,081	3,175	13,120	56,448	66,997	5,511	515	30,540	552,141	1,219,265
Taylor	16,015	1,250	88,548	760	7,693	31,468	39,141	14,561	3,248	69,881	396,955	1,037,157
Union	11,245	848	56,381	1,015	8,066	28,057	36,123	3,863	130	19,348	314,567	787,558
Van Buren	10,854	859	40,300	712	7,986	13,196	27,546	31,704	462	220,362	341,458	1,178,066
Wapello	9,642	676	47,848	1,754	8,547	15,320	25,956	12,255	445	65,398	300,450	802,404
Warren	14,716	1,248	69,004	848	9,985	30,808	40,557	13,963	5,727	42,626	419,283	1,180,925
Washington	15,216	1,049	128,651	5,917	7,406	34,573	41,979	6,341	1,502	31,516	442,397	1,199,747
Wayne	12,873	1,270	45,297	222	7,894	25,647	36,150	11,489	1,727	59,321	300,869	885,355
Webster	17,847	577	74,257	2,284	12,086	16,971	34,491	526		2,873	585,826	930,310
Winnebago	9,773	145	49,385	186	12,516	19,875	32,391	861		3,877	236,836	714,140
Winneshiek	16,136	86	106,434	2,224	23,599	35,911	64,871	7,444	607	15,270	360,379	1,143,314
Woodbury	19,348	1,266	145,768	6,624	11,720	40,414	52,134	6,148	1,980	32,766	440,667	1,031,559
Worth	9,394	144	39,542	317	11,728	22,039	33,716	858		5,280	213,795	623,983
Wright	15,545	413	74,330	1,134	9,852	25,377	35,229	2,357	88	15,704	334,596	601,281
Total	1,371,918	68,069	8,922,316	247,802	1,084,551	2,810,366	4,983,171	567,423	207,684	2,981,157	35,760,027	97,739,302

TABLE NO. 5.

Acreage in sweet corn, pop corn, and acreage and total yield of timothy and clover seed, by counties for the year 1916.

Counties	Sweet Corn		Pop Corn		Timothy Seed		Clover Seed	
	Acres	Total tons green corn gathered for canning	Acres	Total pounds	Acres	Total bushels	Acres	Total bushels
Adair	22	35	5	3,478	12,011	55,059	1,739	2,142
Adams					4,250	19,083	1,028	1,375
Allamakee	13	13	1	2,200	9,587	57,745	1,019	3,753
Appanoose	8	6	97	116,800	13,663	62,096	586	321
Audubon	311	913	2	2,400	3,129	18,088	891	1,914
Benton	3,295	5,967	1	375	5,018	25,289	985	965
Black Hawk	2,061	3,103	21	15,716	1,066	5,218	428	368
Boone	20	10			304	1,290	448	534
Bremer	1,251	2,626			275	1,390	60	38
Buchanan	914	1,534	7	2,304	1,733	8,477	159	389
Buena Vista	845	2,176	134	23,390	519	2,713	242	120
Butler	27	31	6	7,200	1,815	9,679	32	40
Calhoun	480	1,253	3	2,300	292	1,423	706	617
Carroll			68	90,720	1,283	6,634	5,089	2,022
Cass	1,239	2,857	50	53,105	2,350	12,928	2,933	5,556
Cedar	233	341	8	9,700	4,830	30,569	1,083	1,486
Cerro Gordo	4	13	2	124	1,289	6,941	137	330
Cherokee			108	111,544	1,569	6,270	527	410
Chickasaw			5	6,000	8,843	37,061	14	54
Clarke	6	7	2	2,450	15,840	75,496	850	1,144
Clay	2	2	314	559,690	2,730	12,355	190	98
Clayton	474	884	1	435	5,816	37,544	3,851	4,488
Clinton	14	16	6	7,200	2,340	13,864	987	1,699
Crawford	1	2	288	602,535	1,450	6,931	2,234	2,265
Dallas	443	900	9	10,800	495	2,522	1,693	2,476
Davis	9	14	9	2,160	17,173	62,592	713	664
Decatur	1	3	2	2,300	14,446	67,510	891	863
Delaware	276	395	5	6,000	2,208	11,864	589	606
Des Moines	40	30	5	7,750	1,335	7,531	2,636	2,045
Dickinson			34	40,800	1,382	7,349	451	483
Dubuque	291	513			2,745	15,317	2,945	4,194
Emmet	13	9	11	13,200	357	1,397	633	445
Fayette	299	667	1	1,200	9,099	43,490	463	443
Floyd	4	4	52	62,400	3,581	15,566	26	12
Franklin	1,082	2,486	5	8,060	829	4,181	77	69
Fremont	662	1,036	2	3,237	511	2,369	473	1,350
Greene	1	4			285	1,481	553	330
Grundy	4	1	2	2,400	1,134	7,233	133	142
Guthrie	1	4	111	133,200	11,396	54,815	2,034	2,675
Hamilton			8	9,600	525	2,531	98	122
Hancock	145	253	5	6,000	582	2,542	271	148
Hardin	10	20	112	134,400	289	1,821	79	67
Harrison	961	1,593			1,958	9,908	3,065	2,803
Henry			27	32,400	125	372	721	737
Howard			10	16,000	8,473	29,691	15	13
Humboldt	1	2	1	900	278	1,234	245	92
Ida	16	35	6,119	19,128,005	833	4,563	439	274
Iowa	589	861			24,449	106,384	674	540
Jackson	4	10			4,369	18,002	4,610	4,629
Jasper	109	255	29	51,270	1,723	14,184	2,483	3,573

TABLE NO. 5—Continued

Counties	Sweet Corn		Pop Corn		Timothy Seed		Clover Seed	
	Acres	Total tons green corn gathered for canning	Acres	Total pounds	Acres	Total bushels	Acres	Total bushels
Jefferson	-------	------	------	-----------	5,286	26,494	4,068	4,063
Johnson	361	662	10	9,072	3,630	17,001	3,563	3,225
Jones	-------	------	------	-----------	1,741	7,843	1,557	1,776
Keokuk	4	5	2	2,400	4,750	22,571	1,537	2,147
Kossuth	200	350	34	33,829	568	1,794	478	287
Lee	52	126	6	4,360	5,247	24,167	1,334	1,090
Linn	483	787	41	19,230	1,831	9,702	1,358	1,567
Louisa	518	977	1	933	1,207	6,683	1,350	1,000
Lucas	-------	------	2	1,192	18,299	82,968	295	227
Lyon	-------	------	------	-----------	267	1,490	144	145
Madison	174	249	2	464	4,912	23,996	3,893	6,101
Mahaska	6	4	1	1,400	2,136	6,895	4,335	4,624
Marion	25	10	------	-----------	1,645	7,366	4,900	5,406
Marshall	2,264	6,333	47	45,235	2,763	16,642	888	835
Mills	9	5	8	9,600	658	2,796	668	794
Mitchell	79	217	1	1,000	6,997	31,653	94	129
Monona	53	630	160	179,740	123	840	146	259
Monroe	-------	------	------	-----------	3,985	20,488	541	401
Montgomery	389	815	8	9,600	1,168	6,400	3,100	4,426
Muscatine	1	8	25	25,265	1,523	8,313	1,417	1,130
O'Brien	1	3	4	4,800	2,541	14,833	224	245
Osceola	-------	------	------	-----------	2,357	10,223	324	417
Page	5	5	6	7,200	1,623	8,296	1,804	2,442
Palo Alto	-------	------	22	26,400	200	723	131	57
Plymouth	58	305	31	18,329	831	4,549	312	324
Pocahontas	2	9	3	3,600	423	1,928	328	164
Polk	1,730	2,578	27	12,221	294	1,738	1,084	1,257
Pottawattamie	54	243	9	7,068	1,541	6,426	3,418	4,264
Poweshiek	648	1,515	265	421,210	11,099	56,947	421	332
Ringgold	-------	------	1	1,200	17,078	74,933	703	680
Sac	507	1,365	7,055	11,541,427	1,067	5,736	592	330
Scott	25	87	11	8,430	1,027	2,499	3,159	3,735
Shelby	207	481	5	3,321	1,516	7,953	5,131	6,382
Sioux	-------	------	35	42,000	343	1,844	133	219
Story	226	479	1	1,250	313	1,597	276	197
Tama	596	984	------	-----------	6,196	28,700	700	923
Taylor	-------	------	3	3,600	7,827	41,527	2,136	2,786
Union	-------	------	2	2,400	12,983	62,596	932	1,473
Van Buren	1	3	------	-----------	8,156	34,917	3,430	3,416
Wapello	62	46	------	-----------	3,334	17,218	2,218	2,387
Warren	6	11	------	-----------	6,848	52,960	1,612	3,250
Washington	-------	------	1	750	2,183	10,380	5,067	5,189
Wayne	-------	------	14	16,800	35,435	143,256	401	294
Webster	7	20	25	21,300	334	1,561	369	4,259
Winnebago	680	1,748	7	8,400	296	1,990	155	75
Winneshiek	1	3	1	1,200	17,888	86,432	24	18
Woodbury	-------	-------	121	165,910	1,021	5,058	1,324	1,616
Worth	131	240	2	2,400	1,233	6,162	46	62
Wright	11	19	1	1,200	423	1,951	348	192
Total	25,166	52,186	15,694	33,957,424	426,898	2,031,627	125,636	148,540

TABLE NO. 6.

Comparative table showing number of swine lost in Iowa in 1916, 1915 and 1913.

Counties	Swine lost by cholera, 1916	Swine lost by cholera, 1915	Swine lost by cholera, 1913
Adair	2,679	5,791	32,151
Adams	2,510	6,378	12,080
Allamakee	17	86	903
Appanoose	159	803	1,933
Audubon	2,557	3,628	29,716
Benton	3,025	5,994	25,770
Black Hawk	1,061	5,422	26,480
Boone	2,765	1,706	26,810
Bremer	126	2,303	8,250
Buchanan	5	434	22,117
Buena Vista	5,114	3,482	68,286
Butler	553	1,261	37,211
Calhoun	1,865	1,578	23,755
Carroll	4,051	4,477	39,318
Cass	5,231	9,279	42,266
Cedar	5,281	12,407	42,729
Cerro Gordo	1,368	1,239	43,255
Cherokee	4,497	5,003	63,223
Chickasaw	111	2,007	16,595
Clarke	537	2,818	4,918
Clay	2,420	1,453	31,875
Clayton	654	760	1,700
Clinton	889	2,198	19,999
Crawford	9,354	9,648	71,865
Dallas	1,678	2,311	18,436
Davis	66	1,704	280
Decatur	835	2,901	1,237
Delaware	374	1,255	33,348
Des Moines	1,731	7,180	9,353
Dickinson	731	868	17,716
Dubuque	1,557	4,257	23,299
Emmet	1,679	1,873	18,505
Fayette	351	528	6,158
Floyd	470	882	18,046
Franklin	896	5,690	31,367
Fremont	2,836	7,065	7,271
Greene	1,829	1,790	26,568
Grundy	1,031	2,962	23,618
Guthrie	3,460	3,050	30,932
Hamilton	2,294	2,385	35,526
Hancock	284	1,656	38,672
Hardin	2,292	5,707	28,015
Harrison	4,084	7,872	20,122
Henry	977	5,033	2,861
Howard	60	1,073	7,223
Humboldt	3,129	2,372	46,225
Ida	3,031	4,168	52,358
Iowa	4,250	8,939	3,656
Jackson	322	1,453	3,502
Jasper	3,207	9,380	48,499
Jefferson	506	3,719	3,207
Johnson	4,519	14,139	17,646
Jones	1,007	4,563	9,470
Keokuk	2,131	13,659	20,620
Kossuth	2,707	2,757	78,295
Lee	354	3,860	6,978
Linn	1,463	3,186	24,196
Louisa	6,320	11,129	12,665
Lucas	203	2,523	1,001
Lyon	4,886	5,701	70,181
Madison	1,712	6,305	16,584
Mahaska	4,311	21,574	30,899
Marion	3,063	8,491	27,030
Marshall	4,642	6,454	48,293
Mills	2,153	4,249	16,632
Mitchell	174	1,368	13,810
Monona	1,574	4,961	37,085
Monroe	33	1,313	1,644
Montgomery	2,461	6,882	28,403
Muscatine	2,372	4,276	11,702
O'Brien	4,761	2,635	58,865
Osceola	824	399	36,620
Page	3,711	15,192	30,809
Palo Alto	3,779	1,701	46,260
Plymouth	10,610	6,875	105,055
Pocahontas	3,469	2,318	38,651
Polk	3,117	4,648	20,937
Pottawattamie	12,164	21,376	42,065
Poweshiek	2,035	8,301	24,902
Ringgold	135	2,066	8,625
Sac	4,966	4,691	67,715
Scott	3,104	4,061	21,860
Shelby	3,462	7,120	25,118
Sioux	13,587	11,570	123,101
Story	4,032	3,118	27,672
Tama	3,175	8,148	31,407
Taylor	760	5,031	18,062
Union	1,015	3,585	7,377
Van Buren	712	2,785	2,844
Wapello	1,754	6,634	7,606
Warren	848	4,486	18,270
Washington	5,917	11,696	24,433
Wayne	222	3,245	10,487
Webster	2,284	1,697	40,381
Winnebago	186	2,179	14,639
Winneshiek	2,224	1,999	3,543
Wright	1,134	2,216	49,718
Woodbury	6,624	9,819	61,998
Worth	317	1,503	16,427
Total	247,802	476,712	2,709,876

PART XII

Statistical Tables of Iowa's Principal Farm Crops. Also Statistical Tables of the Principal Farm Crops and Live Stock by States, the United States and the World

CORN CROPS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	41	230,633,200	$ .25	$ 57,658,300	5,625,200
1885	33	224,636,522	.23	51,666,400	6,803,834
1890	28	239,675,156	.41	98,266,814	8,550,827

CORN CROP—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st.	Total	Acreage
1896	39	312,692,210	$ .14	$ [illegible],916,900	8,043,390
1897	29	239,452,150	.17	40,706,860	8,253,522
1898	34.5	289,214,850	.23	66,519,400	8,396,286
1899	36.3	306,852,710	.23	70,429,410	8,460,521
1900	40.3	345,055,040	.27	93,164,860	8,618,660
1901	26.2	227,908,850	.50	113,954,000	8,687,480
1902	34	296,950,230	.28	[illegible],432,700	8,700,000
1903	31	250,511,210	[illegible]	[illegible],984,071	7,398,320
1904	36	323,853,330	.35	113,348,665	[illegible]
1905	37.2	345,871,840	[illegible]	[illegible],055,144	9,285,150
1906	41	388,836,252	[illegible]	[illegible],155,143	9,443,960
1907	29.6	246,808,460	.44	[illegible],635,322	8,858,000
1908	35.9	301,873,150	[illegible]	[illegible],955,306	8,399,610
1909	34.6	308,636,868	.51	[illegible],098,802	8,681,850
1910	39.8	334,274,1[illegible]	[illegible]	[illegible],374,794	8,399,712
1911	32.9	281,366,000	[illegible]	[illegible],937,964	8,534,500
1912	45.8	421,368,400	[illegible]	[illegible],698,624	9,199,610
1913	34.9	329,343,000	[illegible]	[illegible],311,370	9,434,500
1914	39	363,689,600	.55	[illegible],029,280	9,324,300
1915	30.0	285,433,000	.45	128,444,850	9,556,400
1916	35	331,582,186	.81	268,581,571	9,479,030
Average for 21 years	35.3	310,055,451	39.7	123,415,954	8,760,276

OATS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	35	42,288,800	$ .23	$ 9,496,424	1,179,680
1885	32.5	71,737,900	.21	15,064,959	2,207,320
1890	29	80,002,735	.38	30,401,039	2,758,715

OATS—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	26	73,450,000	$ .12	$ 8,814,000	2,825,000
1897	30	132,517,150	.16	21,211,380	4,405,782
1898	32	139,915,340	.21	29,383,220	4,299,243
1899	34.5	140,647,300	.19	26,722,980	4,069,557
1900	35	138,832,300	.20	27,766,460	3,991,690
1901	32	114,883,000	.35	40,209,230	3,799,220
1902	31	92,907,900	.24	22,297,000	3,770,624
1903	25.9	99,012,660	.30	29,703,798	3,822,822
1904	29.4	118,435,570	.26	30,793,284	4,018,980
1905	33.8	146,439,240	.25	36,609,810	4,177 545
1906	34	142,036,530	.27	38,349,878	4,166,800
1907	24.5	111,190,400	.39	43,364,256	4,536,170
1908	25.5	112,830,490	.43	48,517,110	4,431,650
1909	27	117,083,850	.35	40,979,348	4,312,134
1910	36	169,207,098	.27	45,685,916	4,697,749
1911	25.7	120,208,300	.41	59,285,403	4,660,500
1912	44.4	206,949,700	.27	55,876,419	4,665,100
1913	34.2	164,851,000	.34	56,049,340	4,824,400
1914	34	172,696,000	.41	70,805,360	5,154,200
1915	38.6	201,446,400	.32	64,462,848	5,214,900
1916	36.5	189,876,501	.49	93,039,485	5,199,269
Average for 21 years	31.9	138,353,178	29.7	42,377,454	4,335,397

WHEAT—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre spring wheat	Average yield per acre winter wheat	Total yield spring wheat	Total yield winter wheat	Total yield all wheat	Average farm price Dec. 1st	Total farm value Dec. 1st	Acreage
1880	10.5	------	------------	------------	36,099,760	$.82	$ 29,501,803	3,437,948
1885	12.	------	------------	------------	31,776,108	.61	19,383,426	2,648,009
1890	11.7	------	------------	------------	25,114,552	.78	19,589,350	2,092,896

WHEAT—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre spring wheat	Average yield per acre winter wheat	Total yield spring wheat	Total yield winter wheat	Total yield all wheat	Average farm price Dec. 1st	Total farm value Dec. 1st	Acreage
1896	13.	17.	7,047,235	3,351,550	10,398,785	$.57	$ 6,020,000	739,245
1897	13.4	13.	12,941,600	1,671,454	14,613,054	.74	10,813,650	1,222,974
1898	14.8	16.5	19,152,352	3,168,916	22,321,268	.53	11,602,000	1,484,682
1899	12.7	11.	19,574,792	226,040	19,900,830	.58	10,701,490	1,559,931
1900	14.3	13.3	20,280,280	1,018,070	21,288,350	.60	12,799,370	1,492,630
1901	15.3	17.6	17,429,230	865,770	18,295,000	.60	10,965,000	1,188,239
1902	13.	18.	12,680,800	825,045	13,532,845	.53	7,062,640	1,021,281
1903	12.6	16.9	9,481,350	1,435,380	10,916,730	.67	7,167,643	837,422
1904	9.1	14.3	7,080,430	1,017,000	8,097,430	.89	7,042,809	846,070
1905	14.4	20.2	5,155,760	1,253,020	6,408,780	.72	4,614,321	420,068
1906	15.	23.	5,603,880	1,566,050	7,169,930	.64	4,579,697	443,810
1907	13.	19.8	4,402,320	1,698,101	6,100,421	.82	4,974,302	424,407
1908	15.4	19.7	4,968,250	1,678,540	6,646,790	.86	5,716,239	408,614
1909	12.5	18.2	3,809,460	3,621,953	7,431,413	.90	6,688,272	502,762
1910	19.3	18.5	6,773,799	3,635,405	10,409,204	.86	8,951,915	546,179
1911	13.1	19.7	4,674,500	3,959,000	8,633,500	.89	7,683,715	559,272
1912	18.7	24.3	9,486,700	8,133,530	17,620,230	.77	13,554,135	840,360
1913	15.1	23.1	5,510,200	11,693,900	17,204,100	.77	13,136,953	871,040
1914	13.	22.	3,389,070	12,038,210	15,427,280	.95	14,862,788	799,435
1915	15.9	21.3	4,155,150	13,352,600	17,507,750	.84	14,614,535	888,960
1916	12.2	15.6	2,111,771	4,621,073	6,732,844	1.56	10,503,237	6,732,844
Average for 21 years	14.1	17.	8,843,282	3,849,076	12,697,930	.78	9,240,701	1,134,773

BARLEY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	23	4,600,000	$ .42	$ 1,932,000	200,000
1885	27	5,737,095	.33	1,893,241	212,485
1890	24	3,664,368	.47	1,722,254	152,682

BARLEY—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	29	15,881,618	$ .20	$ 3,176,320	547,642
1897	25	14,076,850	.23	3,237,670	551,867
1898	27.5	14,138,000	.30	4,209,740	509,580
1899	26.4	14,719,316	.30	4,415,570	557,598
1900	25.3	12,695,200	.33	4,189,410	501,740
1901	24.2	14,654,410	.44	6,447,940	604,610
1902	25	15,380,910	.33	5,075,710	594,070
1903	24.7	12,179,790	.37	4,506,522	493,108
1904	25	12,317,710	.34	4,188,021	493,370
1905	27.5	15,566,770	.33	5,137,034	565,700
1906	26.5	14,858,830	.36	5,349,178	558,870
1907	24.6	9,893,330	.60	5,935,998	397,210
1908	26.7	10,629,660	.50	5,314,830	307,408
1909	17.5	10,352,049	.46	4,761,938	562.622
1910	25.9	8,614,541	.56	4,824,143	324,571
1911	22.9	7,197,090	.90	6,447,381	313,147
1912	32.5	9,587,760	.50	4,793,880	294,935
1913	23.8	8,756,300	.53	4,640,839	368,600
1914	26	11,423,310	.56	5,397,053	437,400
1915	30.6	8,591,881	.51	4,381,859	280,520
1916	28.2	7,467,049	.90	6,720,344	265,048
Average for 21 years	25.9	11,856,303	45.5	4,911,970	453,791

RYE—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	14	574,000	$ .38	$ 218,120	41,000
1885	15	1,710,000	.42	[illegible]	114,000
1890	16	1,608,960	.51	820,570	100,560

RYE—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	16	1,891,716	$ .25	$ 486,680	121,670
1897	15	3,490,344	.34	1,186,710	226,198
1898	16	3,370,550	.38	1,280,800	210,309
1899	16.3	2,061,160	.40	[illegible]	[illegible]
1900	15.6	1,621,130	.43	[illegible]	[illegible]
1901	15.8	859,630	.48	[illegible]	54,390
1902	17	[illegible]	.40	353,132	55,150
1903	15.6	[illegible]	.44	[illegible]	123,273
1904	15	1,517,090	.54	819,228	99,500
1905	18	[illegible]	.52	667,420	71,305
1906	17.5	1,093,160	.48	520,719	62,530
1907	17	[illegible]	.61	549,036	52,975
1908	17.1	[illegible]	.63	547,515	[illegible]
1909	13.4	556,846	.60	334,107	[illegible]
1910	13.8	407,058	.61	248,305	29,502
1911	16.8	486,130	.79	384,043	28,710
1912	20.7	[illegible]	.61	542,003	42,970
1913	18.3	1,274,500	.59	751,955	69,830
1914	19	1,369,260	.77	1,054,320	73,150
1915	18.6	1,301,140	.77	1,001,877	[illegible]
1916	12.5	461,210	1.15	530,392	[illegible]
Average for 21 years	16.4	1,357,523	.56	[illegible]	[illegible]

HAY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield tame hay	Total yield—tons	Average yield wild hay	Total yield—tons	Total yield all hay—tons	Average value per ton—tame hay	Average value per ton—wild hay	Total value—all hay	Acreage
*1880									
*1885									
1890	1.5	4,991,335				$ 6.84		$34,140,731	3,327,557

*No authentic data obtainable.

HAY—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield tame hay	Total yield—tons	Average yield wild hay	Total yield—tons	Total yield all hay—tons	Average value per ton—tame hay	Average value per ton—wild hay	Total value—all hay	Acreage
1896	1.5	3,376,440	1.5	2,325,000	5,701,440	$ 4.50	$ 3.30	$22,782,000	3,800,960
1897	1.6	3,362,287	1.3	1,939,117	5,301,320	4.50	3.70	22,304,000	3,315,972
1898	1.7	3,852,561	1.2	1,645,419	5,498,080	4.30	3.50	22,281,000	4,104,967
1899	1.5	4,852,941	1.2	1,458,195	5,311,130	5.75	4.90	29,350,000	3,742,655
1900	1.4	3,609,010	1	1,530,050	5,139,060	6.50	5.00	31,120,000	4,078,960
1901	1.4	3,711,680	1.2	1,268,700	4,980,380	8.25	6.30	38,712,000	3,608,450
1902	1.8	4,439,040	1.3	1,202,860	5,641,900	6.80	5.50	36,787,322	3,391,408
1903	1.9	5,216,404	1.3	1,191,345	6,407,749	5.75	4.95	35,891,480	3,651,894
1904	1.5	4,499,090	1.2	1,091,590	5,590,680	5.62	4.50	30,197,040	3,707,298
1905	1.8	6,477,300	1.2	1,313,310	7,790,610	5.50	4.50	41,535,045	4,692,925
1906	1.3	4,892,950	1.2	1,110,690	6,003,640	7.50	5.50	42,805,920	4,418,600
1907	1.5	5,117,878	1.3	1,172,590	6,290,468	8.50	6.75	51,316,945	4,268,730
1908	1.8	5,838,640	1.6	1,445,989	7,284,620	6.16	5.09	43,326,060	4,146,870
1909	1.7	5,828,580	1.4	1,219,630	7,048,210	7.42	5.90	50,443,781	4,299,740
1910	1.1	3,876,844	1.1	807,280	4,684,124	10.15	8.00	45,808,207	4,367,725
1911	0.8	3,246,200	0.9	683,385	3,929,585	13.44	10.28	50,653,116	4,214,540
1912	1.6	4,287,600	1.4	1,085,440	5,373,040	9.89	7.43	50,469,183	3,682,359
1913	1.5	4,010,300	1.3	910,205	4,920,505	9.93	8.80	47,832,083	3,359,365
1914	1.4	4,234,370	1.3	860,280	5,094,650	10.78	8.28	52,769,626	3,607,320
1915	1.8	5,955,080	1.3	841,463	6,796,543	8.94	7.41	59,473,633	3,870,542
1916	1.4	4,324,165	1.2	645,709	4,969,874	9.00	7.89	44,012,129	3,702,855
Average 21 yrs.	1.5	4,524,255	1.3	1,226,107	5,702,743	8.88	6.07	40,470,027	3,906,387

FLAX—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	10	1,034,200	$ 1.00	$ 1,034,200	103,420
*1885			.94	2,563,293	
1890	10.5	2,929,081	1.10	3,276,989	283,722

*No other data.

FLAX—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	9.5	1,946,720	$ .95	$ 1,135,000	199,128
1897	10	2,498,600	.87	2,173,782	249,882
1898	10.5	2,376,600	.80	1,901,280	225,014
1899	11.2	1,597,790	1.04	1,661,898	142,175
1900	11.7	1,222,980	1.50	1,834,470	108,850
1901	18.8	916,890	1.29	916,890	104,140
1902	8	755,350	1.00	725,350	94,767
1903	8.7	355,160	.78	277,024	40,823
1904	11	591,140	1.15	679,811	51,370
1905	9.8	173,770	.90	156,393	17,732
1906	10.7	205,280	.97	200,091	19,160
1907	10.8	461,960	.98	408,640	42,790
1908	11.3	461,580	1.01	466,175	40,833
1909	10	173,650	1.29	223,647	17,365
1910	8.6	170,387	2.28	388,482	19,821
1911	8.5	173,710	2.00	347,420	20,205
1912	11.3	423,060	1.31	554,208	37,305
1913	10	223,490	1.36	303,946	22,255
1914	11	152,280	1.21	184,258	14,440
1915	9.5	127,701	1.57	200,491	13,455
1916	8.5	65,196	2.06	134,304	7,658
Average for 21 years	10.4	717,716	1.25	708,266	70,913

POTATOES—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1880	95	10,165,000	$ .35	$ 3,557,750	107,000
1885	82	12,874,000	.40	5,149,600	157,000
1890	49	8,332,352	.81	6,749,205	170,048

POTATOES—1896-1916.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year	Average yield per acre	Total yield	Average farm value per bushel Dec. 1st	Total value	Acreage
1896	87	14,814,795	$ .21	$ 2,962,950	170,285
1897	62	10,051,910	.45	4,523,360	163,248
1898	76	12,538,410	.31	3,826,900	164,456
1899	98	15,252,934	.24	3,660,714	154,243
1900	78	10,850,900	.40	4,340,360	149,680
1901	37.4	5,098,460	.90	4,588,610	136,300
1902	91	12,051,670	.34	4,095,650	138,484
1903	53.8	6,082,694	.75	4,562,020	113,433
1904	125	14,255,680	.28	3,991,590	113,250
1905	84	9,352,190	.50	4,676,045	111.335
1906	101	11,697,500	.48	5,614,800	115,810
1907	84	9,847,430	.62	6,105,406	117,350
1908	89.9	10,658,290	.59	6,288,391	118,517
1909	90	12,427,595	.53	6,586,625	138,139
1910	75.3	9,986,881	.58	5,792,391	132,640
1911	71	9,386,390	.71	8,353,887	132,865
1912	104	12,904,500	.44	5,677,980	124,030
1913	47.3	5,532,170	.85	4,702,344	117,000
1914	87	9,540,200	.58	5,533,316	110,205
1915	93	8,002,200	.53	4,241,166	85,140
1916	46.6	4,132,494	1.75	7,231,864	88,691
Average for 21 years	80	10,212,633	.57	5,112,208	128,124

STATISTICS OF GRAIN CROPS. 1916.

CORN.

Corn: Area and production in undermentioned countries, 1914-1916.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
NORTH AMERICA.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
United States	103,435,000	106,197,000	105,954,000	2,672,804,000	2,994,793,000	2,583,241,000
Canada:						
Ontario	239,000	237,000	160,000	13,410,000	13,860,000	5,976,000
Quebec	17,000	16,000	13,000	514,000	508,000	295,000
Other	(1)	(2)	(2)	(2)	(2)	(2)
Total, Canada	256,000	253,000	173,000	13,924,000	14,368,000	6,271,000
Mexico	4,748,000	(3)	(3)	78,443,000	60,000,000	(3)
Total				2,765,171,000	3,069,161,000	
SOUTH AMERICA.						
Argentina	10,260,000	10,386,000	9,930,000	263,135,000	338,235,000	161,133,000
Chile	59,000	(3)	(3)	1,505,000	1,822,000	(3)
Uruguay	692,000	852,000	588,000	7,142,000	11,382,000	(3)
Total	11,011,000			271,782,000	351,439,000	
EUROPE.						
Austria-Hungary:						
Austria	[4]465,000	(3)	(3)	[4]10,771,000	[4]10,000,000	(3)
Hungary proper	6,129,000	6,194,000	(3)	172,308,000	180,550,000	(3)
Croatia-Slavonia	(3)	(3)	(3)	25,000,000	25,000,000	(3)
Bosnia-Herzegovina	(3)	(3)	(3)	7,000,000	7,000,000	(3)
Total Austria-Hungary	(3)	(3)		215,079,000	222,550,000	
Bulgaria	1,571,000	(3)	(3)	30,901,000	35,000,000	(3)
France	1,128,000	766,000	812,000	22,530,000	14,000,000	(3)
Italy	3,680,000	3,886,000	3,830,000	104,966,000	121,824,000	78,736,000
Portugal	(3)	(3)	(3)	15,000,000	9,275,000	(3)
Roumania	5,104,000	5,207,000	5,056,000	102,552,000	86,412,000	(3)
Russia:						
Russia proper	3,186,000	3,119,000	3,666,000	61,670,000	44,655,000	71,989,000
Northern Caucasia	834,000	930,000	(3)	19,241,000	18,743,000	(3)
Total, Russia	4,020,000	4,049,000		80,911,000	63,398,000	
Serbia	(3)	(3)	(3)	20,000,000	12,000,000	(3)
Spain	1,137,000	1,152,000	(3)	30,325,000	29,096,000	(3)
Total				622,264,000	593,555,000	
ASIA.						
India:						
British	6,079,000	6,073,000	(3)	82,400,000	82,200,000	(3)
Native States	(3)	(3)	(3)	(3)	(3)	(3)
Total				82,400,000	82,200,000	
Japan	141,000	144,000	157,000	3,753,000	3,570,000	4,102,000
Philippine Islands	1,041,000	1,095,000	(3)	13,336,000	14,753,000	(3)
Total				99,489,000	100,523,000	

[1] Less than 500 acres.
[2] No crop.
[3] No official statistics.
[4] Galicia and Bukowina not included.
[5] Census of 1911.

Corn: Area and production in undermentioned countries, 1914-1916—Continued.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
AFRICA.						
Algeria	(3)	(3)	(3)	350,000	9,350,000	(3)
Egypt	1,763,000	1,907,000	1,850,000	87,253,000	39,803,000	(3)
Union of South Africa	(3)	(3)	(3)	[5]30,830,000	30,750,000	31,168,000
Total				109,433,000	70,903,000	
AUSTRALASIA.						
Australia:	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Queensland	157,000	176,000	146,000	4,039,000	4,394,000	2,067,000
New South Wales[1]	157,000	(2)	(2)	4,539,000	(2)	(2)
Victoria	18,000	(2)	(2)	826,000	(2)	(2)
Western Australia	(3)	(2)	(2)	1,000	(2)	(2)
South Australia[4]	(3)	(2)	(2)	3,000	(2)	(2)
Total Australia	332,000	340,000		9,462,000	8,721,000	8,769,000
New Zealand	6,000	5,000	7,000	312,000	284,000	350,000
Total, Australasia	338,000	345,000		9,774,000	9,005,000	9,119,000
Grand total				3,877,913,000	4,194,586,000	

[4] Includes northern territory.
[3] Less than 500 acres.
[2] No official statistics.
[1] Includes Federal territory.

Corn: Total production of countries named in preceding table, 1895-1916.

Year	Production	Year	Production	Year	Production	Year	Production
	Bushels.		Bushels.		Bushels.		Bushels.
1895	2,834,750,000	1901	2,366,883,000	1906	3,963,645,000	1911	3,481,007,000
1896	2,964,435,000	1902	3,187,311,000	1907	3,420,321,000	1912	4,371,888,000
1897	2,587,206,000	1903	3,066,506,000	1908	3,606,931,000	1913	3,587,429,000
1898	2,682,619,000	1904	3,109,252,000	1909	3,563,226,000	1914	3,877,913,000
1899	2,724,100,000	1905	3,461,181,000	1910	4,031,630,000	1915	4,194,586,000
1900	2,792,561,000					1916	

Corn: Acreage, production, and total farm value, by states, 1915 and 1916.

State	Thousands of Acres		Production (thousands of bushels)		Total value, basis Dec. 1 price (thousands of dollars)	
	1916	1915	1916	1915	1916	1915
Maine	15	16	645	656	765	558
New Hampshire	19	22	874	990	1,005	752
Vermont	45	47	1,935	2,256	2,128	1,895
Massachusetts	42	48	1,764	2,304	2,117	1,843
Rhode Island	11	12	341	516	471	516
Connecticut	63	65	2,709	3,250	3,251	2,762
New York	540	605	16,200	24,200	17,820	18,876
New Jersey	270	285	10,800	10,830	10,800	8,122
Pennsylvania	1,450	1,520	56,550	58,520	54,854	40,964
Delaware	205	210	6,970	6,615	6,203	4,101
Maryland	700	710	27,300	24,850	24,297	15,158
Virginia	2,140	2,125	60,990	60,562	56,721	42,999
West Virginia	725	800	22,112	25,200	22,333	18,648
North Carolina	2,900	2,900	53,650	60,900	59,015	46,893
South Carolina	2,065	2,130	32,008	35,145	36,169	30,576
Georgia	4,000	4,330	62,000	64,950	62,000	50,661
Florida	840	800	12,600	12,000	11,340	8,760
Ohio	3,675	3,700	115,762	153,550	104,186	85,988
Indiana	5,137	5,025	174,658	190,950	146,713	97,384
Illinois	10,400	10,400	306,800	374,400	257,712	202,176
Michigan	1,650	1,750	45,375	56,000	43,106	38,080
Wisconsin	1,690	1,775	60,840	40,825	55,973	27,761
Minnesota	2,520	2,800	84,420	64,400	67,536	39,928
Iowa	10,050	9,950	366,825	298,500	293,460	152,235
Missouri	6,775	6,500	132,112	191,750	118,901	109,298
North Dakota	510	700	13,515	9,800	11,353	6,566
South Dakota	2,950	3,250	84,075	94,250	64,738	46,182
Nebraska	7,400	7,100	192,400	213,000	150,072	100,110
Kansas	6,950	5,550	69,500	172,050	62,550	87,746
Kentucky	3,400	3,500	95,200	105,000	82,824	58,800
Tennessee	3,250	3,450	84,500	93,150	79,430	54,027
Alabama	3,735	3,900	46,688	66,300	47,622	45,747
Mississippi	3,400	3,550	47,600	67,450	46,648	43,842
Louisiana	2,134	2,200	44,814	45,100	42,125	28,864
Texas	6,900	7,100	131,100	166,850	136,344	96,773
Oklahoma	2,950	3,800	53,325	112,100	49,592	51.566
Arkansas	2,550	2,700	45,135	62,100	44.232	39,744
Montana	74	70	1,850	1,960	1,720	1,352
Wyoming	25	35	550	875	495	586
Colorado	175	170	7,362	11,280	6,626	6,204
New Mexico	125	105	2,625	2,730	2,966	1,993
Arizona	22	20	770	600	1,078	690
Utah	13	13	429	442	493	354
Nevada	1	1	34	35	42	33
Idaho	21	22	735	770	735	500
Washington	38	39	1,406	1,053	1,406	811
Oregon	40	35	1,340	1,155	1,273	947
California	64	64	2,048	2,624	2,540	2,309
United States	105,954	106,197	2,583,241	2,994,793	2,295,783	1,722,680

WHEAT.

Wheat. Area and production of undermentioned countries, 1914-1916.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
NORTH AMERICA.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
United States	53,541,000	60,469,000	52,785,000	891,017,000	1,025,801,000	639,886,000
Canada:						
New Brunswick	13,000	14,000	14,000	234,000	267,000	(1)
Ontario	834,000	1,093,000	872,000	17,658,000	30,252,000	(1)
Manitoba	2,616,000	3,343,000	3,342,000	38,605,000	96,425,000	(1)
Saskatchewan	5,348,000	6,838,000	5,252,000	73,494,000	195,168,000	(1)
Alberta	1,371,000	1,564,000	1,474,000	28,859,000	51,355,000	(1)
Other	111,000	134,000	131,000	2,430,000	2,837,000	(1)
Total Canada	10,293,000	12,986,000	10,085,000	161,280,000	376,304,000	220,367,000
Mexico	1,478,000	(1)	(1)	4,389,000	4,000,000	(1)
Total				1,056,686,000	1,406,105,000	
SOUTH AMERICA.						
Argentina	16,243,000	15,471,000	16,420,000	113,904,000	168,468,000	172,620,000
Chile	1,018,000	1,278,000	(1)	16,403,000	19,002,000	21,145,000
Uruguay	911,000	783,000	950,000	5,887,000	3,596,000	8,167,000
Total	18,172,000	17,532,000		136,194,000	191,066,000	201,932,000
EUROPE.						
Austria-Hungary:						
Austria	[2]1,66[illegible],000	(1)	(1)	[2]38,024,000	[2]38,000,000	(1)
Hungary proper	8,016,000	8,288,000	(1)	105,237,000	152,934,000	(1)
Croatia-Slavonia	741,000	(1)	(1)	7,716,000	15,000,000	(1)
Bosnia-Herzegovina	(1)	(1)	(1)	2,500,000	3,000,000	(1)
Total Austria-Hungary				153,477,000	208,934,000	
Belgium	400,000	(1)	(1)	13,973,000	8,000,000	(1)
Bulgaria	2,638,000	(1)	(1)	25,979,000	46,212,000	38,241,000
Denmark	[3]134,000	164,000	152,000	5,785,000	7,979,000	6,040,000
Finland	(1)	(1)	(1)	130,000	130,000	(1)
France	14,975,000	13,564,000	12,855,000	282,689,000	225,132,000	213,214,000
Germany	4,932,000	4,950,000	(1)	145,944,000	141,676,000	(1)
Greece	(1)	(1)	(1)	7,000,000	6,000,000	(1)
Italy	11,783,000	12,502,000	11,678,000	169,581,000	170,541,000	176,529,000
Montenegro	(1)	(1)	(1)	200,000	200,000	(1)
Netherlands	148,000	160,000	136,000	5,779,000	6,143,000	4,034,000
Norway	(1)	(1)	14,000	269,000	269,000	305,000
Portugal	(1)	(1)	(1)	10,000,000	6,571,000	7,343,000
Roumania	5,218,00	4,705,000	4,843,000	49,270,000	89,241,000	78,520,000
Russia:						
Russia proper	50,986,000	49,052,000	48,525,000	463,748,000	525,450,000	595,419,000
Poland[4]	343,000	(1)	(1)	5,883,000	(1)	(1)
Northern Caucasia	10,597,000	10,031,000	(1)	109,636,000	[5]127,756,000	(1)
Total Russia, European	61,926,000	59,083,000		579,267,000	653,206,000	
Serbia	(1)	(1)	(1)	9,000,000	10,000,000	(1)
Spain	9,681,000	10,037,000	10,070,000	116,089,000	139,298,000	152,329,000
Sweden	269,000	(1)	(1)	8,472,000	9,170,000	(1)
Switzerland	113,000	111,000	124,000	3,277,000	3,957,000	3,821,000

[1] No official statistics.

[2] Galicia and Bukowina not included in 1914 and 1915.

[3] Census of 1910.

[4] Winter wheat in 1914 in 5 governments only.

[5] Includes 1 government of Transcaucasia.

Wheat: Area and production of undermentioned countries, 1914-1916—Continued.

Couutry	Area			Production		
	1914	1915	1916	1914	1915	1916
United Kingdom:						
England	1,770,000	2,122,000	1,862,000	59,217,000	68,437,000	55,825,000
Wales	37,000	49,000	50,000	1,082,000	1,415,000	1,383,000
Scotland	61,000	77,000	63,000	2,642,000	3,053,000	2,336,000
Ireland	37,000	87,000	76,000	1,415,000	3,238,000	2,827,000
Total United Kingdom	1,905,000	2,335,000	2,051,000	64,356,000	76,143,000	62,371,000
Total				1,650,537,000	1,808,802,000	
ASIA						
India:	Acres.	Acres.	Arces.	Bushels.	Bushels.	Bushels.
British[1]	28,475,000	32,475,000	30,143,000	312,032,000	376,731,000	318,005,000
Native States	(2)	(2)	(2)	(2)	(2)	(2)
Total				312,032,000	376,731,000	318,005,000
Cyprus	(2)	(2)	(2)	2,500,000	2,000,000	(2)
Japanese Empire:						
Japan	1,174,000	1,250,000	1,280,000	22,975,000	25,798,000	24,444,000
Formosa	16,000	(2)	(2)	195,000	100,000	(2)
Total	1,190,000			23,170,000	25,998,000	
Persia	(2)	(2)	(2)	14,000,000	16,000,000	(2)
Russia:						
Central Asia (4 governments of)	5,501,000	6,518,000	(2)	68,448,000	58,025,000	(2)
Serbia (4 governments of)	7,931,000	7,727,000	(2)	104,038,000	50,321,000	(2)
Transcaucasia (1 government)	11,000	(3)	(2)	82,000	(3)	(2)
Total	13,443,000	14,245,000		172,568,000	108,346,000	
Turkey (Asia Minor only)	(2)	(2)	(2)	35,000,000	35,000,000	(2)
Total				559,270,000	564,075,000	
AFRICA						
Algeria	3,368,000	3,209,000	(2)	30,000,000	34,654,000	(2)
Egypt	1,301,000	1,582,000	1,447,000	32,831,000	39,148,000	36,543,000
Tunis	1,010,000	1,112,000	1,482,000	2,205,000	11,023,000	7,165,000
Union of South Africa	(2)	(2)	557,000	[4]6,034,000	7,076,000	4,857,000
Total				71,070,000	91,901,000	
AUSTRALASIA						
Australia:						
Queensland	132,000	127,000	94,000	1,825,000	1,635,000	427,000
New South Wales	3,205,000	2,758,000	4,235,000	39,219,000	13,235,000	69,445,000
Victoria	2,566,000	2,864,000	3,680,000	33,974,000	4,065,000	60,366,000
South Australia	2,268,000	2,502,000	2,739,000	17,470,000	3,639,000	35,210,000
Western Australia	1,097,000	1,376,000	1,733,000	13,751,000	2,707,000	18,811,000
Tasmania	18,000	24,000	49,000	361,000	396,000	1,025,000
Total Australia	9,286,000	9,651,000	12,530,000	106,600,000	25,677,000	185,284,000
New Zealand	167,000	230,000	328,000	5,559,000	6,854,000	7,294,000
Total Australasia	9,453,000	9,881,000	12,858,000	112,159,000	32,531,000	192,579,000
Grand Total				3,585,916,000	4,094,480,000	

---

[1] Including certain Feudatory States.

[2] No official statistics.

[3] Included in Northern Caucasia.

[4] Yield of 1911 census.

Wheat: Total production of countries named in preceding table, 1891-1916.

Year	Production	Year	Production	Year	Production	Year	Production
	Bushels.		Bushels.		Bushels.		Bushels.
1891	2,432,322,000	1898	2,948,305,000	1905	3,327,084,000	1912	3,791,951,000
1892	2,481,805,000	1899	2,783,885,000	1906	3,434,354,000	1913	4,127,437,000
1893	2,559,174,000	1900	2,610,751,000	1907	3,133,965,000	1914	3,585,916,000
1894	2,660,557,000	1901	2,955,975,000	1908	3,182,105,000	1915	4,094,480,000
1895	2,593,312,000	1902	3,090,116,000	1909	3,581,519,000	1916	----------
1896	2,506,320,000	1903	3,189,813,000	1910	3,575,055,000		
1897	2,236,268,000	1904	3,163,542,000	1911	3,551,795,000		

All wheat: Acreage, production, and total farm value, by states, 1915 and 1916.

State	Thousands of Acres		Production (thousands of bushels)		Total value, basis Dec. 1 price (thousands of dollars)	
	1916	1915	1916	1915	1916	1915
Maine	5	4	135	112	252	125
Vermont	1	1	25	30	41	32
New York	430	475	9,030	11,875	15,170	11,994
New Jersey	90	78	1,800	1,560	2,952	1,654
Pennsylvania	1,375	1,330	26,125	24,605	42,322	25,589
Delaware	124	125	1,860	1,875	3,013	2,044
Maryland	640	658	10,240	10,272	17,510	10,786
Virginia	1,300	1,230	16,250	16,974	26,812	18,332
West Virginia	580	500	4,640	4,500	7,424	4,860
North Carolina	950	900	9,975	9,810	17,556	11,772
South Carolina	210	225	2,226	2,430	4,207	3,353
Georgia	234	325	3,808	3,575	7,083	4,612
Ohio	1,500	1,980	20,250	40,194	34,222	41,802
Indiana	1,620	2,650	19,440	45,580	32,854	46,492
Illinois	1,475	2,800	16,225	53,200	26,771	53,200
Michigan	800	960	13,600	20,448	22,712	20,652
Wisconsin	188	265	3,315	4,662	5,304	4,429
Minnesota	3,715	4,160	27,555	70,870	44,639	63,783
Iowa	660	950	10,450	18,985	16,302	16,517
Missouri	1,950	2,773	16,575	34,108	27,349	33,426
North Dakota	7,150	8,350	39,325	151,970	59,774	132,214
South Dakota	3,650	3,725	24,825	63,762	37,237	54,835
Nebraska	3,540	3,876	68,550	71,018	109,680	59,655
Kansas	8,174	8,525	98,022	106,538	160,756	94,819
Kentucky	890	900	8,010	9,900	13,297	10,395
Tennessee	865	860	7,958	9,030	13,449	9,752
Alabama	110	100	1,045	1,200	1,933	1,500
Mississippi	6	5	90	100	158	105
Texas	1,200	1,650	13,200	25,575	22,836	27,365
Oklahoma	3,050	3,350	29,585	38,860	49,407	34,585
Arkansas	255	250	2,040	2,750	3,325	2,778
Montana	1,485	[illegible]	28,655	42,180	46,134	32,900
Wyoming	165	125	3,560	3,315	5,162	2,586
Colorado	600	570	11,885	13,770	17,828	11,015
New Mexico	113	80	2,104	1,976	3,156	1,779
Arizona	40	39	1,160	1,092	1,740	1,256
Utah	326	320	6,900	8,225	10,488	7,074
Nevada	55	56	1,592	1,660	2,229	1,577
Idaho	634	670	15,071	18,730	22,004	14,984
Washington	1,590	2,000	37,635	51,420	53,818	42,165
Oregon	850	900	19,550	20,025	28,347	16,821
California	550	440	5,600	7,040	8,512	6,688
United States	52,785	60,469	639,886	1,025,801	1,025,765	942,303

OATS.

Oats. Area and production in undermentioned countries, 1914-1916.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
NORTH AMERICA	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
United States	38,442,000	40,996,000	41,539,000	1,141,060,000	1,549,030,000	1,251,992,000
Canada:						
New Brunswick	200,000	201,000	198,000	6,488,000	5,560,000	(1)
Quebec	1,327,000	1,400,000	1,138,000	42,119,000	42,182,000	
Ontario	2,840,000	3,095,000	2,410,000	99,400,000	122,810,000	
Manitoba	1,331,000	1,441,000	1,363,000	31,951,000	69,741,000	
Saskatchewan	2,520,000	2,937,000	2,657,000	61,816,000	157,629,000	
Alberta	1,502,000	1,912,000	1,653,000	57,076,000	107,741,000	
Other	341,000,000	379,000	376,000	14,228,000	14,710,000	
Total Canada	10,061,000	11,365,000	9,795,000	313,078,000	520,103,000	351,174,000
Mexico	(1)	(1)	(1)	17,000	17,000	(1)
Total	----------	----------	----------	1,454,155,000	2,069,150,000	----------
SOUTH AMERICA						
Argentina	3,087,000	2,869,000	2,565,000	50,981,000	57,251,000	75,280,000
Chile	122,000	151,000	(1)	4,437,000	7,105,000	(1)
Uruguay	97,000	82,000	106,000	1,850,000	933,000	2,283,000
Total	----------	----------	----------	57,268,000	65,289,000	----------
EUROPE						
Austria-Hungary:						
Austria	[2]2,835,000	(1)	(1)	[2]131,111,000	[2]132,000,000	(1)
Hungary proper	2,603,000	2,664,000	(1)	86,537,000	80,925,000	(1)
Croatia-Slavonia	(1)	(1)	(1)	4,000,000	5,000,000	(1)
Bosnia-Herzegovina	(1)	(1)	(1)	3,000,000	4,000,000	(1)
Total Austria-Hungary	----------	----------	----------	225,651,000	221,925,000	----------
Belgium	686,000	(1)	(1)	49,742,000	40,000,000	(1)
Bulgaria	379,000	(1)	(1)	8,080,000	9,545,000	7,372,000
Denmrak	[3]1,059,000	1,024,000	1,040,000	38,653,000	42,834,000	42,282,000
Finland	(1)	(1)	(1)	18,678,000	22,000,000	(1)
France	8,873,000	8,062,000	7,796,000	274,458,000	206,795,000	246,158,000
Germany	10,843,000	11,404,000	(1)	622,674,000	412,400,000	(1)
Italy	1,213,000	1,208,000	1,102,000	26,827,000	31,443,000	26,189,000
Netherlands	346,000	381,000	343,000	19,957,000	19,644,000	22,239,000
Norway	[3] 270,000	(1)	296,000	9,325,000	9,325,000	10,919,000
Roumania	1,056,000	1,065,000	1,068,000	25,015,000	29,054,000	28,935,000
Russia:						
Russia proper	39,195,000	37,302,000	35,491,000	692,197,000	745,150,000	869,960,000
Poland	(1)	(1)	(1)	(1)	(1)	(1)
Northern Caucasia	1,099,000	[4] 987,000	(1)	30,291,000	[4]25,303,000	(1)
Total	40,294,000	38,289,000	----------	722,488,000	770,453,000	----------
Serbia	(1)	----------	(1)	5,000,000	4,000,000	(1)
Spain	1,304,000	1,403,000	1,391,000	31,227,000	36,949,000	34,948,000
Sweden	1,960,000	(1)	(1)	52,557,000	91,311,000	(1)
United Kingdom:						
England	1,730,000	1,889,000	1,862,000	71,408,000	78,409,000	78,090,000
Wales	200,000	199,000	222,000	7,431,000	7,305,000	8,237,000
Scotland	920,000	972,000	990,000	38,115,000	40,313,000	37,362,000
Ireland	1,029,000	1,089,000	1,072,000	63,287,000	68,604,000	62,354,000
Total United Kingdom	3,879,000	4,139,000	4,146,000	180,241,000	194,631,000	186,043,000
Total	----------	----------	----------	2,310,573,000	2,142,309,000	----------

---

[1] No official statistics.

[2] Galicia and Bukowina not included.

[3] Census of 1910.

[4] Includes 1 government of Transcaucasia.

Oats: Area and production in undermentioned countries, 1914-1916—Continued.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
ASIA	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Cyprus	(1)	(1)	(1)	400,000	400,000	(1)
Russia:						
Central Asia (4 governments of)	1,127,000	1,337,000	(1)	27,887,000	26,586,000	(1)
Siberia (4 governments of)	5,148,000	5,161,000	(1)	133,275,000	68,381,000	(1)
Transcaucasia (1 gov't of)	2,000	(2)	(1)	31,000	(2)	(1)
Total Russia (Asiatic)	6,277,000	----------	----------	161,193,000	94,967,000	----------
Total	----------	----------	----------	161,593,000	95,367,000	----------
AFRICA						
Algeria	573,000	590,000	(1)	10,000,000	15,082,000	(1)
Tunis	99,000	148,000	(1)	689,000	3,445,000	2,067,000
Union of South Africa	(1)	(1)	(1)	[3] 9,661,000	[3] 9,661,000	(1)
Total	----------	----------	----------	20,350,000	28,188,000	----------
AUSTRALASIA						
Australia:						
Queensland	4,000	3,000	(1)	58,000	46,000	(1)
New South Wales	103,000	43,000	61,000	530,000	1,454,000	(1)
Victoria	442,000	435,000	(1)	9,170,000	1,659,000	(1)
South Australia	117,000	141,000	(1)	1,239,000	380,000	(1)
Western Australia	134,000	96,000	103,000	1,708,000	479,000	1,843,000
Tasmania	59,000	57,000	(1)	1,644,000	1,384,000	(1)
Total Australia	859,000	775,000	725,000	15,712,000	4,478,000	17,127,000
New Zealand	362,000	288,000	213,000	15,206,000	11,797,000	7,894,000
Total Australasia	1,221,000	1,063,000	938,000	30,918,000	16,275,000	25,021,000
Grand total	----------	----------	----------	4,034,857,000	4,416,578,000	----------

---

[1] No official statistics. [2] Included in Northern Caucasia. [3] Census of 1911.

Oats: Total production in countries named in preceding table, 1895-1916.

Year	Production	Year	Production	Year	Production	Year	Production
	Bushels.		Bushels.		Bushels.		Bushels.
1895	3,008,154,000	1901	2,862,615,000	1907	3,603,896,000	1913	4,697,437,000
1896	2,847,115,000	1902	3,626,303,000	1908	3,591,012,000	1914	4,034,857,000
1897	2,633,971,000	1903	3,378,034,000	1909	4,312,882,000	1915	4,416,578,000
1898	2,903,974,000	1904	3,611,302,000	1910	4,182,410,000	1916	----------
1899	3,256,256,000	1905	3,510,167,000	1911	3,808,561,000		
1900	3,166,002,000	1906	3,544,961,000	1912	4,617,394,000		

Oats: Acreage, production, and total farm value, by States, 1915 and 1916.

State	Thousands of acres		Production (thousands of bushels)		Total value, basis Dec. 1 price (thousands of dollars)	
	1916	1915	1916	1915	1916	1915
Maine	170	175	6,120	7,000	4,100	3,150
New Hampshire	12	12	444	456	306	246
Vermont	80	81	2,560	3,483	1,664	1,846
Massachusetts	15	12	480	432	317	220
Rhode Island	2	2	54	66	37	33
Connecticut	15	13	450	422	310	232
New York	1,206	1,340	31,356	54,270	19,441	34,422
New Jersey	69	70	2,070	2,275	1,263	1,092
Pennsylvania	1,130	1,140	35,030	43,320	19,967	19,061
Delaware	4	4	120	134	74	68
Maryland	46	45	1,357	1,530	828	750
Virginia	250	225	5,750	5,625	3,622	3,094
West Virginia	140	120	3,220	3,480	2,061	1,775
North Carolina	375	350	6,562	8,050	4,856	4,991
South Carolina	500	525	9,000	9,975	7,200	6,683
Georgia	860	905	16,770	17,648	13,248	11,648
Florida	60	61	900	1,220	639	854
Ohio	1,717	1,683	48,076	69,003	25,480	24,841
Indiana	1,750	1,638	52,500	65,520	26,775	22,277
Illinois	4,470	4,343	172,095	195,435	87,768	68,402
Michigan	1,423	1,530	42,690	64,260	22,626	22,491
Wisconsin	2,200	2,100	81,400	97,650	41,514	35,154
Minnesota	3,325	3,225	88,112	138,675	41,413	44,376
Iowa	5,050	4,950	186,850	198,000	89,688	63,360
Missouri	1,290	1,225	32,250	31,850	17,092	12,103
North Dakota	2,500	2,450	53,750	98,000	23,650	26,460
South Daokta	1,850	1,725	56,425	72,450	25,956	20,286
Nebraska	2,250	2,200	79,875	70,400	37,541	21,824
Kansas	1,550	1,500	36,425	39,750	20,034	14,708
Kentucky	300	250	6,300	6,500	3,780	3,120
Tennessee	360	357	7,560	8,746	4,687	4,373
Alabama	600	600	10,500	11,400	7,875	7,182
Mississippi	320	300	5,760	6,450	4,262	3,870
Louisiana	110	120	2,090	3,000	1,421	1,650
Texas	1,500	1,500	42,750	53,250	26,078	22,365
Oklahoma	1,160	1,350	15,080	36,450	8,596	12,758
Arkansas	350	375	7,350	10,125	4,998	5,265
Montana	660	600	25,080	31,200	11,788	9,984
Wyoming	245	227	8,575	9,534	5,145	4,100
Colorado	290	300	9,570	11,700	5,742	4,797
New Mexico	64	60	1,856	2,160	1,244	1,080
Arizona	9	9	338	333	270	213
Utah	103	100	4,480	4,700	2,733	2,115
Nevada	14	13	602	585	452	322
Idaho	310	335	13,330	15,745	7,198	5,353
Washington	275	275	14,300	13,750	7,293	5,088
Oregon	360	365	17,280	16,060	8,467	5,942
California	200	211	6,500	6,963	4,680	3,482
United States	41,539	40,996	1,251,992	1,549,030	656,179	559,506

BARLEY.

Barley: Area and production in undermentioned countries, 1914-1916.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
NORTH AMERICA.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
United States	7,565,000	7,148,000	7,674,000	194,953,000	228,851,000	180,927,000
Canada:						
New Brunswick	2,000	2,000	2,000	64,000	48,000	(1)
Quebec	85,000	85,000	77,000	2,261,000	2,255,000	
Ontario	461,000	449,000	340,000	13,987,000	15,369,000	
Manitoba	468,000	490,000	475,000	9,828,000	17,763,000	
Saskatchewan	290,000	287,000	262,000	4,901,000	10,570,000	
Alberta	178,000	185,000	161,000	4,806,000	6,984,000	
Other	12,000	11,000	12,000	354,000	342,000	
Total Canada	1,496,000	1,509,000	1,329,000	36,201,000	53,331,000	41,318,000
Mexico	292,000	(1)	(1)	10,839,000	10,000,000	(1)
Total				241,993,000	292,182,000	
SOUTH AMERICA.						
Argentina	418,000	375,000	431,000	8,037,000	5,144,000	(1)
Chile	153,000	224,000	(1)	5,567,000	3,750,000	(1)
Uruguay	14,000	5,000	10,000	165,000	40,000	115,000
Total				13,769,000	8,934,000	

[1]No official statistics.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
EUROPE.						
Austria-Hungary:	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Austria	[1]1,729,000	(2)	(2)	[1]58,458,000	[1]58,000,000	(2)
Hungary proper	2,705,000	2,830,000	(2)	65,265,000	56,186,000	(2)
Croatia-Slavonia	(2)	(2)	(2)	1,940,000	1,938,000	(2)
Bosnia-Herzegovina	(2)	(2)	(2)	3,000,000	3,000,000	(2)
Total Austria-Hungary				128,663,000	119,124,000	
Belgium	84,000	(2)	(2)	4,232,000	4,000,000	(2)
Bulgaria	554,000	(2)	(2)	9,217,000	14,697,000	14,739,000
Denmark	(2)	644,000	633,000	20,780,000	25,989,000	22,306,000
Finland	(2)	(2)	(2)	4,047,000	5,000,000	(2)
France	1,780,000	1,575,000	1,547,000	42,719,000	30,963,000	37,778,000
Germany	3,909,000	4,002,000	(2)	144,125,000	114,077,000	(2)
Italy	610,000	608,000	596,000	6,917,000	11,050,000	10,104,000
Netherlands	67,000	63,000	60,000	3,019,000	3,233,000	2,499,000
Norway	(2)	(2)	98,000	2,591,000	2,821,000	3,026,000
Roumania	1,405,000	1,371,000	1,454,000	25,505,000	28,688,000	30,038,000
Russia:						
Russia proper	25,260,000	24,094,000	25,105,000	310,249,000	311,246,000	442,381,000
Poland	(2)	(2)	(2)	(2)	(2)	(2)
Northern Caucasia	4,495,000	4,404,000	(2)	73,323,000	[3]69,575,000	(2)
Total Russia (European)	29,755,000	28,498,000		383,572,000	380,821,000	
Serbia	(2)	(2)	(2)	3,000,000	2,250,000	(2)
Spain	3,404,000	3,786,000	4,035,000	72,272,000	82,763,000	84,372,000
Sweden	436,000	(2)	(2)	12,195,000	14,252,000	(2)

---

[1]Galicia and Bukowina not included.

[2]No official statistics.

[3]Includes 1 government of Transcaucasia.

Barley: Area and production in undermentioned countries, 1914-1916—Continued.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
United Kingdom:	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Engand	1,420,000	1,152,000	1,245,000	48,205,000	34,898,000	40,324,000
Wales	84,000	80,000	87,000	2,743,000	2,467,000	2,732,000
Scotland	194,000	150,000	170,000	7,616,000	5,183,000	5,341,000
Ireland	172,000	142,000	150,000	8,073,000	5,828,000	6,537,000
Total United Kingdom	1,870,000	1,524,000	1,652,000	66,637,000	48,376,000	54,934,000
Total				929,491,000	888,013,000	
ASIA.						
India:						
British	7,098,000	7,758,000	(2)	125,113,000	142,846,000	(2)
Native States	981,000	(2)	(2)	(2)	(2)	(2)
Total	8,079,000	7,758,000		125,113,000	142,846,000	
Cyprus	(2)	(2)	(2)	2,000,000	2,000,000	(2)
Japanese Empire:						
Japan	3,294,000	3,293,000	3,100,000	85,775,000	100,891,000	99,822,000
Formosa	(2)	(2)	(2)	60,000	75,000	(2)
Total Japanese Empire				85,835,000	100,966,000	
Russia:						
Central Asia (4 govt's of)	485,000	[4]600,000	(2)	7,929,000	[4]7,946,000	(2)
Serbia (4 governments of)	630,000	652,000	(2)	11,498,000	5,707,000	(2)
Transcaucasia (1 gov'mt of)	2,000	(5)	(2)	24,000	(5)	(2)
Total Russia (Asiatic)	1,117,000			19,451,000	13,653,000	
Total				232,399,000	259,465,000	
AFRICA.						
Algeria	3,131,000	2,703,000	(1)	35,785,000	39,866,000	(1)
Tunis	795,000	1,028,000	(1)	3,215,000	11,482,000	6,889,000
Union of South Africa				[2]1,359,000	[2]1,359,000	(1)
Total				40,359,000	52,707,000	
AUSTRALASIA.						
Australia:						
Queensland	9,000	7,000	(1)	120,000	109,000	(1)
New South Wales	21,000	(1)	6,000	313,000	48,000	100,000
Victoria	83,000	62,000	(1)	1,870,000	620,000	(1)
South Australia	91,000	11,000	(1)	1,375,000	461,000	(1)
Western Australia	66,000	4,000	(1)	173,000	17,000	(1)
Tasmania	8,000	(1)	(1)	193,000	100,000	(1)
Total Australia	223,000			4,044,000	1,355,000	
New Zealand	32,000	18,000	30,000	1,234,000	616,000	843,000
Total Australasia	255,000			5,278,000	1,971,000	
Grand total				1,463,289,000	1,503,272,000	

---

[1] No official statistics.

[2] Census of 1911.

[4] Includes Oural.

[5] Included in Northern Caucasia.

Barley: Total production of countries named in preceding table, 1895-1916.

Year	Production	Year	Production	Year	Production	Year	Production
	Bushels.		Bushels.		Bushels.		Bushels.
1895	915,504,000	1901	1,072,195,000	1907	1,271,237,000	1913	1,650,265,000
1896	932,100,000	1902	1,229,132,000	1908	1,274,897,000	1914	1,463,289,000
1897	864,605,000	1903	1,235,786,000	1909	1,458,263,000	1915	1,503,272,000
1898	1,030,581,000	1904	1,175,784,000	1910	1,388,734,000	1916	
1899	965,720,000	1905	1,180,053,000	1911	1,373,286,000		
1900	959,622,000	1906	1,296,579,000	1912	1,466,977,000		

Barley: Acreage, production, and total farm value, by states, 1916.

[000 omitted.]

State	Acreage	Production	Farm value Dec. 1	State	Acreage	Production	Farm value Dec. 1
	Acres.	Bushels.	Dollars		Acres.	Bushels.	Dollars
Maine	6	156	162	Kansas	300	4,800	3,696
New Hampshire	1	28	25	Kentucky	6	156	140
Vermont	15	412	412	Tennessee	10	237	237
New York	81	1,887	1,906	Texas	9	153	122
Pennsylvania	12	300	225	Oklahoma	8	100	100
Maryland	6	192	140	Montana	95	2,660	2,022
Virginia	13	358	304	Wyoming	25	825	718
Ohio	33	917	304	Colorado	160	5,120	4,198
Indiana	15	405	734	New Mexico	11	308	308
				Arizona	32	1,120	1,210
Illinois	60	1,920	1,978				
Michigan	100	2,450	2,230	Utah	34	1,224	930
Wisconsin	610	18,300	19,215	Nevada	12	492	467
Minnesota	1,375	26,125	22,729	Idaho	190	7,410	6,076
Iowa	295	8,702	7,919	Washington	165	6,814	5,724
				Oregon	140	5,390	4,312
				California	1,190	33,320	31,654
Missouri	5	100	93				
North Dakota	1,725	26,738	21,390	United States	7,674	180,927	159,534
South Dakota	825	18,728	15,544				
Nebraska	110	3,080	2,310				

RYE.

Rye. Area and production in undermentioned countries, 1914-1916.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
NORTH AMERICA.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
United States	2,541,000	3,129,000	3,096,000	42,779,000	54,050,000	47,383,000
Canada:						
Quebec	9,000	9,000	8,000	156,000	145,000	(2)
Ontario	78,000	78,000	69,000	1,341,000	1,551,000	(2)
Manitoba	5,000	6,000	6,000	100,000	155,000	(2)
Saskatchewan	3,000	3,000	3,000	54,000	76,000	(2)
Alberta	16,000	17,000	15,000	360,000	463,000	(2)
Other	(1)	(1)	(1)	6,000	4,000	(2)
Total Canada	111,000	113,000	101,000	2,017,000	2,394,000	2,896,000
Mexico	(2)	(2)	(2)	70,000	70,000	(2)
Total				44,866,000	56,514,000	
SOUTH AMERICA.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Argentina	228,000	229,000	212,000	3,346,000	1,811,000	2,008,000
Chile	6,000	(2)	(2)	151,000	150,000	(2)
Uruguay	(1)	(1)	(1)	5,000	1,000	1,000
Total				3,502,000	1,962,000	
EUROPE.						
Austria-Hungary:						
Austria	[3]3,138,000	(2)	(2)	[3]74,555,000	[3]75,000,000	(2)
Hungary	2,638,000	2,625,000	(2)	42,410,000	45,975,000	(2)
Croatia-Slavonia	163,000	(2)	(2)	2,082,000	2,500,000	(2)
Bosnia-Herzegovina	(2)	(2)	(2)	500,000	600,000	(2)
Total Austria-Hungary				119,547,000	124,075,000	
Belgium	645,000	(1)	(1)	23,137,000	18,000,000	(1)
Bulgaria	527,000	(1)	(1)	7,255,000	7,622,000	8,490,000
Denmark	(1)	521,000	479,000	10,905,000	12,989,000	10,580,000
Finland	(1)	(1)	(1)	10,806,000	10,000,000	(1)
France	2,614,000	2,309,000	2,275,000	32,002,000	33,072,000	35,524,000
Germany	15,565,000	15,843,000	(1)	410,478,000	360,310,000	(1)
Italy	304,000	294,000	284,000	5,260,000	4,362,000	5,342,000
Netherlands	563,000	546,000	499,000	13,471,000	13,727,000	12,391,000
Norway	[2] 37,000	(1)	48,000	1,046,000	829,000	729,000
Roumania	208,000	187,000	200,000	1,959,000	2,911,000	(1)
Russia:						
Russia proper	65,967,000	65,866,000	58,407,000	787,625,000	877,522,000	840,722,000
Poland	[3]1,676,000	(1)	(1)	[3]27,984,000	(1)	(1)
Northern Caucasia	439,000	[4] 329,000	(1)	5,469,000	[4]4,633,000	(1)
Total Russia (European)	68,082,000	66,195,000		821,078,000	882,155,000	
Serbia	74,000	(1)	(1)	1,000,000	800,000	(1)
Spain	1,887,000	1,820,000	1,856,000	23,950,000	26,102,000	31,436,000
Sweden	981,000	(1)	921,000	27,599,000	23,133,000	26,000,000
United Kingdom	67,000	62,000	60,000	1,800,000	1,700,000	(1)
Total				1,511,293,000	1,521,787,000	

[1] Less than 500 acres. [2] No official statistics. [3] Galicia and Bukowina not included.

[2] 1910 figures (census). [4] Includes 1 government of Transcaucasia.

[3] Winter rye in 1914 in 5 governments only.

Rye: Area and production in undermentioned countries, 1914-1916—Continued.

Country	Area			Production		
	1914	1915	1916	1914	1915	1916
ASIA						
Russia:						
Central Asia (4 governments)	133,000	378,000	(1)	1,206,000	3,070,000	(1)
Siberia (4 governments)	2,676,000	2,452,000	(1)	35,887,000	20,143,000	(1)
Transcaucasia (1 governments of)	1,000	(5)	(1)	11,000	(5)	(1)
Total Russia (Asiatic)	2,810,000			37,104,000	23,213,000	
AUSTRALASIA						
Australia:						
Queensland	(6)	(1)	(1)	1,000	(1)	(1)
New South Wales	5,000	3,000	2,000	70,000	37,000	22,000
Victoria	2,000	2,000	(1)	20,000	(1)	(1)
South Australia	1,000	(1)	(1)	13,000	6,000	(1)
Western Australia	1,000	(1)	(1)	4,000	(1)	(1)
Tasmania	1,000	1)	(1)	9,000	(1)	(1)
Total Australia	10,000			117,000		
New Zealand	(1)	(1)	(1)	(1)	(1)	(1)
Total Australasia				117,000		
Grand total				1,590,882,000		

[1] No official statistics.
[5] Included in Northern Caucasia.
[6] Less than 500 acres.

Rye: Total production of countries named in Preceding Table, 1895-1916.

Year	Production	Year	Production	Year	Production	Year	Production
	Bushels.		Bushels.		Bushels.		Bushels.
1895	1,468,212,000	1901	1,416,022,000	1907	1,538,788,000	1913	1,880,387,000
1896	1,499,250,000	1902	1,647,845,000	1908	1,590,057,000	1914	1,596,882,000
1897	1,300,645,000	1903	1,659,961,000	1909	1,747,123,000	1915	
1898	1,461,171,000	1904	1,742,112,000	1910	1,673,473,000	1916	
1899	1,583,179,000	1905	1,495,751,000	1911	1,753,933,000		
1900	1,557,634,000	1906	1,433,395,000	1912	1,886,517,000		

Rye: Acreage, production, and total farm value, by States, 1916.
[000 omitted.]

State	Acreage	Production	Farm value Dec. 1	State	Acreage	Production	Farm value Dec. 1
	Acres.	Bushels.	Dollars.		Acres.	Bushels.	Dollars.
Vermont	1	20	24	North Dakota	350	4,655	5,819
Massachusetts	3	56	71	South Dakota	250	4,500	5,310
Connecticut	7	137	171	Nebraska	192	3,072	3,564
New York	151	2,718	3,479	Kansas	46	667	734
New Jersey	70	1,330	1,556	Kentucky	22	246	317
Pennsylvania	260	4,420	4,818	Tennessee	15	150	202
Delaware	1	15	18	Alabama	4	52	91
Maryland	23	356	392	Texas	2	20	24
Virginia	75	938	1,004	Oklahoma	9	90	112
West Virginia	20	320	381	Arkansas	1	10	12
North Carolina	55	534	694	Montana	10	205	197
South Carolina	5	49	91	Wyoming	10	155	167
Georgia	13	124	198	Colorado	28	392	412
Ohio	75	1,088	1,306	Utah	12	144	144
Indiana	185	2,590	3,082				
				Idaho	2	34	32
Illinois	43	666	813	Washington	7	102	113
Michigan	325	4,648	6,042	Oregon	30	510	586
Wisconsin	375	6,075	8,019	California	8	104	121
Minnesota	335	5,025	6,382				
Iowa	55	935	1,075	United States	3,096	47,383	57,857
Missouri	21	231	284				

STATISTICS OF CROPS OTHER THAN GRAIN CROPS, 1916.

Potatoes: Area and production of undermentioned countries, 1913-1915.

Country	Area			Production		
	1913	1914	1915	1913	1914	1915
NORTH AMERICA	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
United States	3,668,000	3,711,000	3,734,000	331,525,000	409,921,000	359,721,000
Canada:						
Prince Edward Island	32,000	32,000	31,000	6,219,000	6,806,000	3,558,000
Nova Scotia	32,000	32,000	34,000	5,369,000	7,165,000	4,759,000
New Brunswick	44,000	44,000	40,000	10,629,000	10,534,000	5,772,000
Quebec	116,000	115,000	117,000	20,504,000	21,811,000	17,510,000
Ontario	152,000	154,000	155,000	18,105,000	25,772,000	14,362,000
Manitoba	26,000	27,000	28,000	5,120,000	3,172,000	3,104,000
Saskatchewan	31,000	31,000	30,000	5,138,000	4,085,000	4,428,000
Alberta	26,000	26,000	27,000	4,350,000	3,652,000	5,155,000
British Columbia	15,000	15,000	16,000	3,110,000	2,675,000	3,956,000
Total Canada	474,000	476,000	478,000	78,544,000	85,672,000	62,604,000
Mexico	(3)	(3)	(3)	[1]924,000	(3)	(3)
Newfoundland	(3)	(3)	(3)	[2]1,524,000	(3)	(3)
Total				412,517,000		
SOUTH AMERICA						
Argentina	278,000	293,000	306,000	38,029,000	(3)	(3)
Chile	78,000	81,000	(3)	8,753,000	9,169,000	9,482,000
Total	371,000	387,000		46,782,000		
EUROPE						
Austria-Hungary:						
Austria	3,152,000	[4]1,774,000	(3)	424,457,000	[4]285,070,000	(3)
Hungary proper	1,513,000	1,513,000	(3)	179,133,000	195,266,000	(3)
Croatia-Slavonia	194,000	(3)	(3)	21,140,000	(3)	(3)
Bosina-Herzegovina	67,000	(3)	(3)	2,998,000	(3)	(3)
Total Austria-Hungary	4,926,000			627,728,000		
Belgium	395,000	411,000	(3)	117,613,000	(3)	(3)
Bulgaria	[5]8,000	(3)	(3)	[2]503,000	(3)	(3)
Denmark	[5]151,000	[5]151,000	164,000	42,231,000	37,335,000	42,350,000
Finland	(3)	(3)	(3)	23,424,000	37,344,000	(3)
France	3,825,000	3,676,000	3,225,000	499,194,000	440,652,000	332,788,000
Germany	8,432,000	8,367,000	8,827,000	1,988,591,000	1,675,370,000	1,983,161,000
Italy	722,000	727,000	725,000	65,741,000	61,104,000	56,768,000
Luxemburg	(3)	(3)	(3)	7,637,000	5,288,000	(3)
Malta	[5]4,000	(3)	(3)	[2]750,000	(3)	(3)
Netherlands	420,000	424,000	438,000	109,260,000	120,780,000	126,741,000
Norway	102,000	(3)	(3)	27,780,000	27,548,000	18,589,000
Roumania[6]	25,000	26,000	28,000	2,523,000	2,654,000	3,765,000
Do	60,000	56,000	52,000	1,066,000	1,083,000	865,000
Russia, European:						
Russia proper	8,664,000	8,652,000	8,210,000	873,999,000	891,579,000	713,908,000
Poland	2,662,000	(3)	(3)	383,736,000	(3)	(3)
Northern Caucasia	194,000	204,000	167,000	16,720,000	17,907,000	[8]15,897,000
Total Russia, European	11,520,000			1,274,455,000		

---

[1] Data for 1906.
[2] Production for 1912.
[3] No official statistics.
[4] Galicia and Bukowina not included.
[5] Area for 1912.
[6] Grown alone.
[7] Grown with corn.
[8] Includes one government of Transcaucasia.

Potatoes: Area and production of undermentioned countries, 1913-1915—Continued.

Country	Area			Production		
	1913	1914	1915	1913	1914	1915
EUROPE—Contd.	Acres.	Acres.	Acres.	Bushels.	Bushels.	Bushels.
Serbia	[1]31,000	(2)	(2)	[3]2,173,000	(2)	(2)
Spain	[1]632,000	688,000	(2)	[3]93,089,000	76,657,000	(2)
Sweden	383,000	376,000	382,000	58,206,000	48,817,000	78,806,000
Switzerland	137,000	137,000	159,000	31,783,000	22,046,000	38,672,000
United Kingdom:						
England	417,000	436,000	437,000	102,834,000	104,804,000	100,881,000
Scotland	149,000	152,000	144,000	36,243,000	40,230,000	36,291,000
Wales	25,000	25,000	26,000	5,233,000	5,445,000	5,821,000
Ireland	582,000	583,000	594,000	139,602,000	128,642,000	138,509,000
Total United Kingdom	1,173,000	1,196,000	1,201,000	283,912,000	279,121,000	281,502,000
Total	---	---	---	5,257,659,000	---	---
ASIA						
Japan	186,000	204,000	194,000	26,139,000	32,312,000	25,077,000
Russia, Asiatic:						
Central Asia (4 governments of)	99,000	110,000	[4]109,000	5,230,000	8,111,000	[4]9,076,000
Serbia (4 governments of)	298,000	441,000	296,000	27,773,000	47,075,000	24,308,000
Transcaucasia (1 government of)	2,000	2,000	(5)	148,000	90,000	(5)
Total Russia, Asiatic	399,000	553,000	---	33,151,000	55,276,000	---
Total	585,000	757,000	---	59,290,000	87,588,000	---
AFRICA						
Algeria	48,000	(2)	(2)	2,119,000	(2)	(2)
Union of South Africa	[6]62,000	(2)	(2)	[6]3,685,000	(2)	(2)
Total	110,000	---	---	5,804,000	---	---
AUSTRALASIA						
Australia:						
Queensland	9,000	10,000	8,000	612,000	618,000	598,000
New South Wales	34,000	39,000	39,000	3,145,000	3,573,000	3,989,000
Victoria	48,000	75,000	65,000	7,135,000	6,593,000	7,056,000
South Australia	9,000	11,000	8,000	1,235,000	1,230,000	673,000
Western Australia	5,000	5,000	5,000	506,000	665,000	550,000
Tasmania	[7]25,000	31,000	32,000	[7]2,711,000	3,001,000	2,946,000
Total Australia	130,000	171,000	157,000	15,344,000	15,680,000	15,812,000
New Zealand	23,000	29,000	22,000	5,514,000	5,869,000	4,952,000
Total Australasia	153,000	200,000	179,000	20,858,000	21,549,000	20,764,000
Grand Total	---	---	---	5,802,910,000	---	---

---

[1] Area for 1912.
[2] No official statistics.
[3] Production for 1912.
[4] Includes Province of Oural.
[5] Included in Northern Caucasia.
[6] Census of 1911.
[7] Includes Federal territory.

Potatoes: Acreage, production, and total farm value, by States, 1916.
[000 omitted.]

State	Acreage	Production	Farm value Dec. 1	State	Acreage	Production	Farm value Dec. 1
	Acres.	Bushels.	Dollars.		Acres.	Bushels.	Dollars.
Maine	125	25,500	36,210	North Dakota	75	6,975	8,021
New Hampshire	15	1,800	2,988	South Dakota	65	4,290	5,877
Vermont	23	2,576	3,581	Nebraska	105	7,665	11,498
Massachusetts	25	2,275	3,981	Kansas	70	4,970	8,200
Rhode Island	5	370	684	Kentucky	49	4,116	5,845
Connecticut	22	2,090	3,658	Tennessee	36	2,952	4,398
New York	320	22,400	35,392	Alabama	20	1,800	3,042
New Jersey	85	10,370	16,074	Mississippi	12	780	1,248
Pennsylvania	272	19,040	28,179	Louisiana	25	1,625	2,714
Delaware	10	900	1,125	Texas	40	2,000	3,800
Maryland	43	4,085	5,433	Oklahoma	34	1,802	3,514
Virginia	125	16,250	22,262	Arkansas	25	1,625	3,088
West Virginia	48	4,224	6,674	Montana	39	4,875	5,850
North Carolina	34	3,230	4.522	Wyoming	18	2,340	2,995
South Carolina	10	750	1,312	Colorado	50	6,900	9,315
Georgia	15	900	1,575	New Mexico	8	816	1,428
Florida	15	1,110	2,220	Arizona	1	115	207
Ohio	140	6,300	11,466	Utah	20	3,600	4,680
Indiana	74	3,256	5,763	Nevada	14	2,660	3,458
Illinois	125	7,250	12,978				
				Idaho	27	4,050	5,144
Michigan	320	15,360	24,576	Washington	60	9,900	9,702
Wisconsin	290	13,630	20,036	Oregon	55	8,250	7,425
Minnesota	280	16,800	21,840	California	75	10,575	14,805
Iowa	115	4,830	8,452				
Missouri	91	5,460	9,828	United States	3,550	285,437	417,063

HAY.

Hay: Acreage, production, and total farm value, by States, 1916.
[000 omitted.]

	Acres.	Bushels.	Dollars.		Acres.	Bushels.	Dollars.
Maine	1,200	1,740	21,576	North Dakota	520	884	5,304
New Hampshire	529	767	11,122	South Dakota	730	1,387	7,490
Vermont	980	1,666	20,992	Nebraska	1,850	4.070	28,897
Massachusetts	480	749	14,231	Kansas	1,680	2,604	19,790
Rhode Island	60	81	1,620	Kentucky	1,080	1,415	17,829
Connecticut	370	574	10,619	Tennessee	1.050	1.449	21,735
New York	4,500	7,290	86,751	Alabama	275	358	4,654
New Jersey	375	585	10,296	Mississippi	275	371	4,081
Pennsylvania	3,255	5,208	71,870	Louisiana	260	429	4,719
Delaware	80	116	1,844	Texas	480	576	6,048
Maryland	465	688	9,632	Oklahoma	550	825	7,425
Virginia	790	1,066	15,990	Arkansas	375	469	5,862
West Virginia	825	1,270	18,415	Montana	825	1,402	15,422
North Carolina	390	507	8,872	Wyoming	580	1,044	12,528
South Carolina	250	325	5,428	Colorado	970	1,988	21,868
Georgia	300	375	6,075	New Mexico	185	370	5,180
Florida	56	70	1,120	Arizona	165	627	9,092
Ohio	3,100	4,867	51,590	Utah	384	845	12,675
Indiana	2,300	3,312	36,101	Nevada	225	540	5,184
Illinois	3,100	4,495	50,794				
				Idaho	725	1,812	21,925
Michigan	2,750	4,372	43,720	Washington	836	2,006	27,683
Wisconsin	2,600	4,420	51,272	Oregon	850	1,955	21,310
Minnesota	1,890	3,496	24,472	California	2,500	4,375	55,125
Iowa	3,600	5,796	52,164				
Missouri	3,350	4,355	40,502	United States	54,965	89.991	1,008,894

APPLES.

Apples. Production, and prices December 1, by States, 1910-1916.

[000 omitted.]

State	Production, bushels (000 omitted)							Farm price per bushel (cents)						
	1910	1911	1912	1913	1914	1915	1916	1910	1911	1912	1913	1914	1915	1916
Maine	1,183	2,267	1,800	1,000	2,467	720	1,680	80	55	50	100	53	89	75
New Hampshire	600	533	733	267	667	353	532	80	79	55	113	53	90	90
Vermont	900	750	867	233	1,067	324	1,104	92	78	79	123	57	94	90
Massachusetts	967	1,000	1,100	767	1,467	885	1,150	90	89	76	134	65	90	99
Rhode Island	100	133	100	100	133	59	87	89	62	82	116	65	108	107
Connecticut	600	800	567	700	833	511	610	80	70	75	94	65	97	100
New York	5,667	13,000	14,667	6,500	16,533	8,528	12,600	100	59	50	95	45	78	75
New Jersey	567	1,033	567	700	1,133	777	750	78	60	72	85	55	80	100
Pennsylvania	3,867	6,833	4,233	3,400	7,700	5,085	6,207	75	54	70	89	50	71	80
Delaware	117	100	140	60	167	122	83	----	85	82	117	58	70	100
Maryland	900	867	883	433	1,167	800	848	65	52	60	100	41	63	80
Virginia	4,033	2,400	5,000	1,733	5,100	4,392	4,433	80	74	60	86	46	63	78
West Virginia	2,367	2,600	3,433	333	4,133	2,513	3,344	78	71	55	130	49	64	76
North Carolina	2,400	1,200	2,533	1,000	3,000	1,972	2,358	98	88	75	95	49	75	80
South Carolina	247	157	200	87	267	221	196	100	126	100	145	85	117	125
Georgia	467	267	467	300	667	625	541	105	118	101	108	80	90	117
Ohio	1,967	6,233	3,533	1,600	4,433	5,984	2,867	93	54	67	110	63	55	100
Indiana	1,633	2,967	1,400	2,200	1,433	3,883	1,307	90	68	84	83	70	53	120
Illinois	267	3,533	1,933	2,733	1,233	4,716	1,616	115	68	79	94	84	47	115
Michigan	1,400	4,100	5,733	2,967	5,733	3,150	4,160	102	70	50	82	49	74	87
Wisconsin	133	1,000	667	1,333	733	1,473	878	112	93	88	95	90	75	110
Minnesota	50	433	233	600	233	412	422	162	102	98	105	90	102	145
Iowa	67	3,167	500	2,367	533	3,220	1,575	130	81	101	112	97	70	145
Missouri	2,533	2,867	6,400	2,633	4,167	6,287	2,700	85	70	53	93	71	51	105
South Dakota	10	80	67	107	67	100	116	150	114	104	145	117	115	150
Nebraska	467	1,200	933	767	400	1,267	567	98	83	88	108	96	66	140
Kansas	2,200	800	2,233	900	1,033	2,125	1,040	78	100	71	110	95	76	130
Kentucky	1,767	2,033	3,200	2,300	3,000	4,170	2,147	100	92	85	92	78	69	113
Tennessee	1,733	967	2,967	1,300	2,867	2,025	1,772	92	104	81	106	75	81	107
Alabama	333	233	400	300	533	532	380	90	130	100	115	94	95	140
Mississippi	110	80	150	123	167	141	116	125	122	106	112	95	105	120
Texas	133	67	167	300	167	187	156	130	128	115	130	108	100	135
Oklahoma	400	350	567	367	500	780	275	107	120	92	122	90	94	145
Arkansas	900	1,000	1,700	1,333	1,667	1,183	1,018	105	115	92	102	83	70	100
Montana	140	300	300	280	300	347	256	120	115	103	142	76	70	110
Wyoming	3	7	10	10	----	----	----	----	----	----	150	138	145	180
Colorado	500	900	1,033	1,100	1,500	693	735	115	122	83	108	70	70	94
New Mexico	113	227	250	217	300	273	119	140	119	120	128	98	87	160
Arizona	33	37	43	30	32	40	46	191	195	204	217	186	170	182
Utah	137	153	227	203	267	142	33	130	110	89	96	63	95	160
Nevada	53	33	87	53	67	40	16	145	151	124	132	125	135	175
Idaho	417	400	550	467	567	573	147	99	112	85	98	78	85	114
Washington	1,933	1,167	2,567	2,300	2,767	2,433	3,225	80	118	70	93	64	80	80
Oregon	1,267	500	1,367	1,167	1,200	1,043	1,285	100	111	69	85	81	75	85
California	1,533	1,567	1,900	1,000	2,000	1,563	1,918	82	92	90	117	76	85	98
United States	47,213	71,340	78,407	48,470	84,400	76,670	67,415	89.6	72.1	66.3	98.1	59.4	69.0	91.8

PEACHES.

Peaches: Production, and prices September 15, by States, 1910-1916.

[000 omitted.]

State	Production, bushels (000 omitted)							Farm price per bushel (cents)						
	1910	1911	1912	1913	1914	1915	1916	1910	1911	1912	1913	1914	1915	1916
New Hampshire	56	-----	-----	44	2	58	24	-----	-----	-----	190	-----	150	200
Massachusetts	68	97	51	105	31	152	66	-----	275	220	180	180	130	226
Rhode Island	18	22	16	29	14	29	14	-----	-----	-----	175	170	103	148
Connecticut	291	249	128	263	142	335	134	-----	200	221	147	175	96	190
New York	1,762	1,536	1,400	1,742	530	2,106	1,238	137	142	160	140	160	90	140
New Jersey	810	440	638	483	1,140	1,275	689	128	175	135	150	98	70	160
Pennsylvania	1,533	1,096	660	922	1,541	2,044	1,069	137	180	186	180	125	80	150
Delaware	810	249	521	312	608	842	346	-----	-----	150	125	95	39	150
Maryland	1,080	492	672	480	1,032	1,248	600	91	138	140	105	98	35	150
Virginia	1,075	318	1,058	312	911	1,358	660	99	138	96	150	100	80	128
West Virginia	598	230	788	132	886	1,164	520	112	154	112	210	105	75	150
North Carolina	1,955	437	2,093	598	1,863	1,955	897	85	124	93	120	95	90	138
South Carolina	1,204	649	1,020	405	1,166	864	545	102	128	105	125	110	100	105
Georgia	5,395	2,145	6,175	1,950	5,785	5,330	3,510	102	140	101	130	100	100	155
Florida	178	126	190	112	188	177	119	100	150	100	-----	100	75	200
Ohio	1,239	1,735	1,055	931	1,653	2,448	1,350	160	140	144	200	140	97	155
Indiana	703	1,147	185	1,276	1,128	648	888	137	118	169	130	110	120	135
Illinois	140	2,310	82	1,998	1,755	874	780	165	84	146	115	105	110	150
Michigan	1,215	2,228	700	1,539	1,247	2,360	2,010	139	111	165	150	140	97	124
Iowa	16	240	24	632	472	112	64	217	152	133	135	135	150	200
Missouri	1,440	2,700	900	4,320	3,780	3,300	1,080	108	98	107	93	90	85	105
Nebraska	150	36	240	210	192	120	30	133	125	156	150	150	140	225
Kansas	2,432	851	2,016	875	1,760	2,442	150	105	124	100	150	120	100	180
Kentucky	770	770	1,210	1,430	1,980	1,320	880	121	109	94	90	75	95	110
Tennessee	1,440	360	2,820	1,140	2,640	2,460	1,080	92	125	77	110	78	80	95
Alabama	1,980	840	2,760	1,140	2,310	2,640	1,110	85	100	100	100	100	90	100
Mississippi	1,340	460	1,800	1,020	1,440	1,540	975	98	121	96	98	85	83	88
Louisiana	488	190	693	460	356	456	567	100	83	150	110	100	88	75
Texas	3,400	1,204	4,140	2,107	1,196	4,081	2,860	106	148	97	120	140	87	100
Oklahoma	1,460	656	2,121	860	220	2,408	230	95	128	68	120	130	57	120
Arkansas	2,000	2,346	4,524	3,120	3,180	5,940	2,340	100	107	78	90	87	63	87
Colorado	346	363	1,035	360	1,025	650	405	180	175	100	124	60	125	125
New Mexico	50	86	84	52	106	154	40	128	85	137	150	130	65	170
Arizona	42	51	54	57	60	60	60	-----	225	215	200	175	-----	200
Utah	195	208	323	284	380	212	84	140	183	106	115	71	95	125
Nevada	2	10	10	8	9	7	1	-----	-----	-----	-----	-----	120	-----
Idaho	60	81	112	92	120	162	25	-----	154	134	120	100	70	165
Washington	348	320	445	446	486	566	415	90	106	76	110	96	80	96
Oregon	317	190	292	311	387	432	276	137	174	133	130	110	84	100
California	9,765	7,412	9,308	7,150	10,387	9,768	8,808	103	111	94	182	80	55	80
United States	48,171	34,880	52,343	39,707	54,109	64,097	36,939	107.9	122.1	102.0	131.6	97.7	80.0	114.0

HORSES AND MULES.

Horses and Mules. Number and value on farms in the United States, 1867-1917.

NOTE.—Figures in *italics* are census returns; figures in roman are estimates of the Department of Agriculture. Estimates of numbers are obtained by applying estimated percentages of increase or decrease to the published numbers of the preceding year, except that a revised base is used for applying percentage estimates whenever new census data are available. It should also be observed that the census of 1910, giving numbers as of April 15, is not strictly comparable with former censuses, which related to numbers June 1.

Jan. 1—	Horses			Mules		
	Number	Price per head Jan. 1	Farm value Jan. 1	Number	Price per head Jan. 1	Farm value Jan. 1
1867	5,401,000	$59.05	$318,924,000	822,000	$66.94	$55,048,000
1868	5,757,000	54.27	312,416,000	856,000	56.04	47,954,000
1869	6,333,000	62.57	396,222,000	922,000	79.23	73,027,000
1870	8,249,000	67.43	556,251,000	1,180,000	90.42	106,654,000
1870 census June 1	*7,145,370*			*1,125,415*		
1871	8,702,000	71.14	619,039,000	1,242,000	91.98	114,272,000
1872	8,991,000	67.41	606,111,000	1,276,000	87.14	111,222,000
1873	9,222,000	66.39	612,273,000	1,310,000	85.15	111,546,000
1874	9,334,000	65.15	608,073,000	1,339,000	81.35	108,953,000
1875	9,504,000	61.10	580,708,000	1,394,000	71.89	100,197,000
1876	9,735,000	57.29	557,747,000	1,414,000	66.46	94,001,000
1877	10,155,000	55.83	567,017,000	1,444,000	64.07	92,482,000
1878	10,330,000	56.63	584,999,000	1,638,000	62.03	101,579,000
1879	10,939,000	52.36	572,712,000	1,713,000	56.00	95,942,000
1880	11,202,000	54.75	613,297,000	1,730,000	61.26	105,948,000
1880 census June 1	*10,357,488*			*1,812,808*		
1881	11,430,000	58.44	667,954,000	1,721,000	69.79	120,096,000
1882	10,522,000	58.53	615,825,000	1,835,000	71.35	130,945,000
1883	10,838,000	70.59	765,041,000	1,871,000	79.49	148,732,000
1884	11,170,000	74.64	833,734,000	1,914,000	84.22	161,215,000
1885	11,565,000	73.70	852,283,000	1,973,000	82.38	162,497,000
1886	12,078,000	71.27	860,823,000	2,053,000	79.60	163,381,000
1887	12,497,000	72.15	901,686,000	2,117,000	78.91	167,058,000
1888	13,173,000	71.82	946,096,000	2,192,000	79.78	174,854,000
1889	13,663,000	71.89	982,195,000	2,258,000	79.49	179,444,000
1890	14,214,000	68.84	978,517,000	2,331,000	78.25	182,394,000
1890 census June 1	*14,969,467*			*2,295,532*		
1891	14,057,000	67.00	941,823,000	2,297,000	77.88	178,847,000
1892	15,498,000	65.01	1,007,594,000	2,315,000	75.55	174,882,000
1893	16,207,000	61.22	992,225,000	2,331,000	70.68	164,764,000
1894	16,081,000	47.83	769,225,000	2,352,000	62.17	146,233,000
1895	15,893,000	36.29	576,731,000	2,333,000	47.55	110,928,000
1896	15,124,000	33.07	500,140,000	2,279,000	45.29	103,204,000
1897	14,365,000	31.51	452,649,000	2,216,000	41.66	92,302,000
1898	13,961,000	34.26	478,362,000	2,190,000	43.88	90,110,000
1899	13,665,000	37.40	511,075,000	2,134,000	44.96	95,963,000
1900	13,538,000	44.61	603,969,000	2,086,000	53.55	111,717,000
1900 census June 1	*18,267,020*			*3,264,615*		
1901[1]	16,745,000	52.86	885,200,000	2,864,000	63.97	183,232,000
1902	16,531,000	58.61	968,935,000	2,757,000	67.61	186,412,000
1903	16,557,000	62.25	1,030,706,000	2,728,000	72.49	197,753,000
1904	16,736,000	67.93	1,136,940,000	2,758,000	78.88	217,533,000
1905	17,058,000	70.37	1,200,310,000	2,889,000	87.18	251,840,000
1906	18,719,000	80.72	1,510,890,000	3,404,000	98.31	334,681,000
1907	19,747,000	93.51	1,846,578,000	3,817,000	112.16	428,064,000
1908	19,992,000	93.41	1,867,530,000	3,869,000	107.76	416,939,000
1909	20,640,000	95.64	1,974,052,000	4,053,000	107.84	437,082,000
1910	21,040,000			4,123,000		
1910 census April 15	*19,833,113*	108.03	2,142,524,000	*4,209,769*	120.20	506,049,000
1911[1]	20,277,000	111.46	2,259,981,000	4,323,000	125.92	544,359,000
1912	20,509,000	105.94	2,172,694,000	4,362,000	120.51	525,657,000
1913	20,567,000	110.77	2,278,222,000	4,386,000	124.31	545,245,000
1914	20,962,000	109.32	2,291,638,000	4,449,000	123.85	551,017,000
1915	21,195,000	103.33	2,190,102,000	4,479,000	112.36	503,271,000
1916	21,159,000	101.60	2,149,786,000	4,593,000	113.83	522,834,000
1917	21,126,000	102.94	2,174,629,000	4,639,000	118.32	548,864,000

---

[1] Estimates of numbers revised, based on census data.

Horses and Mules: Number and value on farms January 1, 1916 and 1917, by States.

State	Horses						Mules					
	Number (thousands) Jan. 1—		Average price per head, Jan. 1—		Farm value (thousands of dollars) Jan. 1—		Number (thousands) Jan. 1—		Average price per head, Jan. 1—		Farm value (thousands of dollars) Jan. 1—	
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
Me.	109	109	$152.00	$142.00	$ 16,568	$ 15,478	------	------	$------	$------	$------	$------
N. H.	44	44	135.00	132.00	5,940	5,808	------	------	------	------	------	------
Vt.	89	89	134.00	130.00	11,926	11,570	------	------	------	------	------	------
Mass.	59	60	156.00	146.00	9,204	8,760	------	------	------	------	------	------
R. I.	8	9	155.00	151.00	1,240	1,350	------	------	------	------	------	------
Conn.	46	46	147.00	146.00	6,762	6,716	------	------	------	------	------	------
N. Y.	609	609	139.00	139.00	84,651	84,651	4	4	155.00	148.00	620	592
N. J.	92	92	149.00	144.00	13,708	13,248	4	4	169.00	164.00	676	656
Pa.	596	602	126.00	124.00	75,096	74,648	48	47	137.00	137.00	6,576	6,439
Del.	36	36	90.00	95.00	3,240	3,420	6	6	116.00	114.00	696	684
Md.	169	169	105.00	105.00	17,745	17,745	25	25	127.00	121.00	3,175	3,025
Va.	361	361	100.00	99.00	36,100	35,739	64	64	122.00	120.00	7,808	7,680
W. Va.	196	194	107.00	108.00	20,972	20,952	12	12	117.00	116.00	1,404	1,392
N. C.	185	185	125.00	122.00	23,125	22,570	200	200	150.00	140.00	30,000	28,000
S. C.	85	84	136.00	135.00	11,560	11,340	171	171	162.00	161.00	28,188	27,531
Ga.	127	125	129.00	126.00	16,383	15,750	324	315	163.00	156.00	52,812	49,140
Fla.	60	59	120.00	112.00	7,200	6,608	31	29	166.00	154.00	5,146	4,466
Ohio	892	901	119.00	116.00	106,148	104,516	26	26	120.00	119.00	3,120	3,094
Ind.	845	854	108.00	104.00	91,260	88,816	95	95	114.00	111.00	10,830	10,545
Ill.	1,452	1,452	106.00	103.00	153,912	149,556	150	152	115.00	111.00	17,250	16,872
Mich.	680	680	121.00	128.00	82,280	87,040	4	4	122.00	133.00	488	532
Wis.	715	712	120.00	124.00	85,800	88,288	3	3	117.00	120.00	351	360
Minn.	900	890	109.00	109.00	98,100	97,010	6	6	110.00	116.00	660	696
Iowa	1,552	1,584	107.00	105.00	166,064	166,320	62	61	116.00	110.00	7,192	6,710
Mo.	1,040	1,060	92.00	90.00	95,680	95,400	350	340	104.00	99.00	36,400	33,660
N. Dak.	825	801	106.00	110.00	87,450	88,110	9	9	122.00	124.00	1,098	1,116
S. Dak.	774	759	93.00	93.00	71,982	70,587	15	15	108.00	109.00	1,620	1,635
Nebr.	1,018	1,028	95.00	94.00	96,710	96,632	112	98	106.00	104.00	11,872	10,192
Kans.	1,120	1,109	99.00	97.00	110,880	107,573	265	255	108.00	105.00	28,620	26,775
Ky.	434	434	93.00	90.00	40,362	39,060	224	229	112.00	102.00	25,088	23,358
Tenn.	350	349	105.00	101.00	36,750	35,249	270	272	120.00	113.00	32,400	30,736
Ala.	150	150	99.00	101.00	14,850	15,150	278	281	118.00	121.00	32,804	34,001
Miss.	243	243	87.00	88.00	21,141	21,384	292	292	109.00	110.00	31,828	32,120
La.	195	193	86.00	82.00	16,770	15,826	139	132	125.00	121.00	17,375	15,972
Tex.	1,156	1,180	78.00	78.00	90,168	92,040	760	768	103.00	100.00	78,280	76,800
Okla.	743	743	86.00	85.00	63,898	63,155	276	282	104.00	98.00	28,704	27,636
Ark.	275	270	87.00	82.00	23,925	22,140	250	240	114.00	102.00	28,500	24,480
Mont.	452	430	92.00	86.00	41,584	36,980	4	4	107.00	98.00	428	392
Wyo.	191	185	80.00	82.00	15,280	15,170	3	3	97.00	99.00	291	297
Colo.	365	361	93.00	90.00	33,945	32,490	20	19	104.00	101.00	2,080	1,919
N. Mex.	250	234	62.00	58.00	15,500	13,572	19	17	89.00	85.00	1,691	1,445
Ariz.	129	124	75.00	71.00	9,675	8,804	8	7	104.00	99.00	832	693
Utah	138	146	87.00	86.00	12,006	12,556	2	2	79.00	78.00	158	156
Nev.	73	77	76.00	75.00	5,548	5,775	3	3	85.00	75.00	255	225
Idaho	239	241	93.00	90.00	22,227	21,690	4	4	100.00	95.00	400	380
Wash.	305	308	98.00	94.00	29,890	28,952	18	17	111.00	106.00	1,998	1,802
Oreg.	286	295	98.00	89.00	28,028	26,255	10	10	103.00	93.00	1,030	903
Cal.	468	493	97.00	96.00	45,396	47,328	70	70	116.00	110.00	8,120	7,700
U. S.	21,126	21,159	$102.94	$101.60	$2,174,629	$2,149,786	4,639	4,593	118.32	113.83	548,864	522,834

Average price per head for horses on the Chicago horse market, 1901-1916.

Date	Drafters	Carriage teams	Drivers	General	Bussers, trammers	Saddlers[1]	Southern chunks
1901	$157.00	$400.00	$137.00	$102.00	$121.00	$147.00	$ 52.00
1902	166.00	450.00	145.00	117.00	135.00	151.00	57.00
[illegible]	170,00	455.00	150.00	122.00	140.00	156.00	62.00
[illegible]	177.00	475.00	150.00	140.00	140.00	160.00	64.00
1905	186.00	486.00	156.00	132.00	145.00	172.00	70.00
1906	188.00	486.00	158.00	154.00	147.00	174.00	72.50
1907	194.00	482.00	165.00	137.00	152.00	172.00	77.50
1908	180.00	450.00	156.00	129.00	138.00	164.00	69.00
1909	194.00	482.00	165.00	137.00	152.00	172.00	77.00
1910	200.00	473.00	172.00	144.00	161.00	177.00	87.00
1911	205.00	483.00	182.00	155.00	170.00	190.00	92.00
1912	210.00	473.00	177.00	160.00	175.00	195.00	97.00
1913	213.00	493.00	174.00	165.00	176.00	189.00	98.00
1914	208.00	483.00	169.00	160.00	171.00	184.00	93.00
1915.							
January	205.00	440.00	165.00	150.00	160.00	180.00	90.00
February	215.00	490.00	170.00	155.00	170.00	190.00	95.00
March	220.00	510.00	175.00	160.00	175.00	195.00	100.00
April	220.00	510.00	175.00	160.00	175.00	195.00	100.00
May	215.00	510.00	170.00	155.00	170.00	190.00	95.00
June	210.00	510.00	165.00	150.00	165.00	185.00	90.00
July	205.00	480.00	165.00	145.00	165.00	180.00	85.00
August	195.00	470.00	160.00	140.00	160.00	175.00	80.00
September	190.00	455.00	155.00	145.00	170.00	170.00	75.00
October	190.00	440.00	155.00	145.00	165.00	165.00	75.00
November	195.00	440.00	155.00	140.00	160.00	165.00	80.00
December	190.00	440.00	155.00	140.00	160.00	165.00	90.00
Year	205.00	473.00	164.00	155.00	166.00	179.00	88.00
1916.							
January	225.00	No sales.	150.00	160.00	165.00	125.00	110.00
February	250.00		200.00	160.00	165.00	125.00	110.00
March	275.00		150.00	160.00	165.00	125.00	110.00
April	275.00		150.00	160.00	165.00	125.00	110.00
May	250.00		200.00	160.00	165.00	125.00	110.00
June	225.00		150.00	160.00	165.00	125.00	110.00
July	225.00		150.00	160.00	165.00	115.00	110.00
August	250.00		175.00	160.00	165.00	115.00	110.00
September	250.00		175.00	160.00	165.00	115.00	110.00
October	275.00		200.00	160.00	165.00	115.00	110.00
November[2]	263.00		145.00	162.00	175.00	142.00	102.00
December[2]	263.00		145.00	162.00	175.00	142.00	102.00
Year	252.00		166.00	160.00	167.00	124.00	109.00

[1] Cavalry horses, 1916.

[2] Mean and high quotations.

CATTLE.

Cattle: Number and value on farms in the United States, 1867-1917.

NOTE.—Figures in *italics* are census returns; figures in roman are estimates of the Department of Agriculture. Estimates of numbers are obtained by applying estimated percentages of increase or decrease to published numbers of the preceding year, except that a revised base is used for applying percentage estimates whenever new census data are available. It should also be observed that the census of 1910, giving numbers as of April 15, is not strictly comparable with former censuses, which related to numbers June 1.

Jan. 1—	Milch cows			Other cattle		
	Number	Price per head Jan. 1	Farm value Jan. 1	Number	Price per head Jan. 1	Farm value Jan. 1 State
1867	8,349,000	$28.74	$239,947,000	11,731,000	$15.79	$185,254,000
1868	8,692,000	26.56	230,817,000	11,942,000	15.06	179,888,000
1869	9,248,000	29.15	269,610,000	12,185,000	18.73	228,183,000
1870	10,096,000	32.70	330,175,000	15,388,000	18.87	290,401,000
1870 census, June 1	*8,935,332*			*13,566,005*		
1871	10,023,000	33.89	339,701,000	16,212,000	20.78	336,860,000
1872	10,304,000	29.45	303,438,000	16,390,000	18.12	296,932,000
1873	10,576,000	26.72	282,559,000	16,414,000	18.06	296,448,000
1974	10,705,000	25.63	274,326,000	16,218,000	17.55	284,706,000
1875	10,907,000	25.74	280,701,000	16,313,000	16.91	275,872,000
1876	11,085,000	25.61	283,879,000	16,785,000	17.00	285,387,000
1877	11,261,000	25,47	286,778,000	17,956,000	15.99	287,156,000
1878	11,300,000	25.74	290,898,000	19,223,000	16.72	321,346,000
1879	11,826,000	21.71	256,721,000	21,408,000	15.38	329,254,000
1880	12,027,000	23.27	279,899,000	21,231,000	16.10	341,761,000
1880 census, June 1	*12,443,120*			*22,488,550*		
1881	12,369,000	23.95	296,277,000	20,939,000	17.33	362,862,000
1882	12,612,000	25.89	326,489,000	23,280,000	19.89	463,070,000
1883	13,126,000	30.21	396,575,000	28,046,000	21.81	611,549,000
1884	13,501,000	31.37	423,487,000	29,046,000	23.52	683,229,000
1885	13,905,000	29.70	412,903,000	29,867,000	23.25	694,383,000
1886	14,235,000	27.40	389,986,000	31,275,000	21.17	661,956,000
1887	14,522,000	26.08	378,790,000	33,512,000	19.79	663,138,000
1888	14,856,000	24.65	366,252,000	34,378,000	17.79	611,751,000
1889	15,299,000	23.94	366,226,000	35,032,000	17.05	597,237,000
1890	15,953,000	22.14	353,152,000	36,849,000	15.21	560,625,000
1890 census, June 1	*16,511,950*			*33,734,128*		
1891	16,020,000	21.62	346,398,000	36,876,000	14.76	544,128,000
1892	16,416,000	21.40	351,378,000	37,651,000	15.16	570,749,000
1893	16,424,000	21.75	357,300,000	35,954,000	15.24	547,882,000
1894	16,487,000	21.77	358,999,000	36,600,000	14.66	536,790,000
1895	16.505,000	21.97	362,602,000	34,364,000	14.06	482,999,000
1896	16,138,000	22.55	363,956,000	32,085,000	15.86	508,928,000
1897	15,942,000	23.16	369,240,000	30,508,000	16.65	507,929,000
1898	15,841,000	27.45	434,814,000	29,264,000	20.92	612,297,000
1899	15,990,000	29.66	474,234,000	27,994,000	22.79	637,931,000
1900	16,292,000	31.60	514,812,000	27,610,000	24.97	689,486,000
1900 census, June 1	*17,135,633*			*50,585,777*		
1901[1]	16,834,000	30.00	505,093,000	45,500,000	19.93	906,644,000
1902	16,697,000	29.23	488,130,000	44,728,000	18.76	839,126,000
1903	17,105,000	30.21	516,712,000	44,659,000	18.45	824,055,000
1904	17,420,000	29.21	508,841,000	43,629,000	16.32	712,178,000
1905	17,572,000	27.44	482,272,000	43,669,000	15.15	661,571,000
1906	19,794,000	29.44	582,789,000	47,068,000	15.85	746,172,000
1907	20,968,000	31.00	645,497,000	51,566,000	17.10	881,557,000
1908	21,194,000	30.67	650,057,000	50,073,000	16.89	845,938,000
1909	21,720,000	32.36	702,945,000	49,379,000	17.49	863,754,000
1910	21,801,000			47,279,000		
1901 census, April 15	*20,625,432*	35.29	727,802,000	*41,178,434*	19.07	785,261,000
1911[1]	20,823,000	39.97	832,209,000	39,679,000	20.54	815,184,000
1912	20,699,000	39.39	815,414,000	37,260,000	21.20	790,064,000
1913	20,497,000	45.02	922,783,000	36,030,000	26.36	949,645,000
1914	20,737,000	53.94	1,118,487,000	35,855,000	31.13	1,116,333,000
1915	21,262,000	55.33	1,176,338,000	37,067,000	33.38	1,237,376,000
1916	22,108,000	53.92	1,191,955,000	39,812,000	33.53	1,334,928,000
1917	22,768,000	59.66	1,358,435,000	40,849,000	35.88	1,465,786,000

[1] Estimates of numbers revised, based on census data.

CATTLE.

Cattle: Number and value on farms January 1, 1916 and 1917, by States.

State	Milch cows						Other cattle					
	Number (thousands) Jan. 1—		Average price per head Jan. 1—		Farm value (thousands) of dollars Jan. 1—		Number (thousands) Jan. 1—		Average price per head Jan. 1—		Farm value (thousands) of dollars Jan. 1—	
	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916	1917	1916
Maine	162	159	$58.00	$50.00	$9,396	$7,950	110	105	$27.90	$24.60	$3,069	$ 2,583
New Hampshire	97	97	66.50	60.00	6,450	5,820	63	63	31.60	28.50	1,991	1,796
Vermont	281	273	62.50	54.00	17,562	14,742	172	170	25.70	23.30	4,420	3,961
Massachusetts	160	158	75.00	68.00	12,000	10,744	88	85	29.60	25.40	2,605	2,159
Rhode Island	22	22	77.00	77.00	1,694	1,694	11	11	31.30	28.30	344	311
Connecticut	121	119	73.50	68.30	8,894	8,128	73	72	30.80	29.70	2,248	2,138
New York	1,539	1,539	66.00	57.20	101,574	88,031	939	939	31.00	26.90	29,109	25,259
New Jersey	155	152	76.00	71.00	11,780	10,792	74	73	34.00	32.50	2,516	2,372
Pennsylvania	980	971	62.50	56.50	61,250	54,862	664	657	30.80	27.10	20,451	17,805
Delaware	43	42	56.00	53.00	2,408	2,226	21	21	31.90	28.00	670	588
Maryland	183	181	58.00	52.00	10,614	9,412	125	125	32.20	28.80	4,025	3,600
Virginia	373	359	46.50	41.50	17,344	14,898	486	472	31.80	28.20	15,455	13,310
West Virginia	245	241	53.50	50.00	13,108	12,050	369	362	38.70	36.30	14,280	13,141
North Carolina	315	321	39.00	34.00	12,285	10,914	364	375	19.40	16.80	7,062	6,300
So. Carolina	189	189	40.00	34.50	7,560	6,520	215	215	18.30	15.40	3,934	3,311
Georgia	418	414	37.00	31.50	15,406	13,041	686	686	16.20	13.50	11,113	9,261
Florida	141	136	43.00	40.00	6,063	5,440	865	800	16.50	14.90	14,272	11,920
Ohio	950	922	60.00	56.00	57,000	61,632	863	872	36.40	33.80	31,413	29,474
Indiana	706	672	58.50	54.50	41,301	36,624	735	728	39.00	36.80	28,665	26,790
Illinois	1,057	1,047	68.00	60.20	71,876	63,029	1,251	1,239	43.30	38.50	54,168	47,702
Michigan	865	847	61.50	56.20	53,198	47,601	720	735	30.20	27.30	21,744	20,066
Wisconsin	1,750	1,675	65.00	55.00	113,750	92,125	1,340	1,313	29.80	25.20	39,932	33,088
Minnesota	1,302	1,240	58.00	51.00	75,516	62,340	1,340	1,275	26.50	22.40	35,510	28,560
Iowa	1,405	1,391	66.50	58.50	93,432	81,374	2,754	2,737	43.20	38.30	118,973	108.827
Missouri	845	837	58.50	54.40	49,432	45,533	1,000	1,555	40.90	38.90	65,440	60,490
North Dakota	410	373	61.50	57.00	25,215	21,261	629	577	38.20	25.00	24,028	20,195
So. Dakota	524	485	67.00	59.00	35,108	28,615	1,181	1,064	43.70	38.40	51,610	40,858
Nebraska	676	650	68.00	60.00	45,968	39,000	2,349	2,237	44.30	40.50	104,061	90,598
Kansas	900	835	64.50	60.60	58,050	50,601	2,115	2,160	43.10	41.70	91,156	90,072
Kentucky	418	406	49.50	44.80	20,691	18,189	570	570	33.70	30.80	19,209	17,556
Tennessee	366	366	43.00	39.50	15,738	14,457	528	518	25.50	22.60	13,464	11,707
Alabama	405	405	36.50	32.00	14,782	12,960	534	534	14.70	13.00	7,850	6,942
Mississippi	450	447	38.00	33.50	17,100	14,974	535	535	16.40	14.10	8,774	7,544
Louisiana	274	271	42.00	37.00	11,508	10,027	475	475	20.00	16.80	9,500	7,980
Texas	1,175	1,119	54.50	51.00	64,038	57,069	5,482	5,428	32.60	33.10	178,713	179,667
Oklahoma	535	519	60.00	55.00	32,100	28,545	1,222	1,186	38.90	37.90	47,356	44,949
Arkansas	402	402	44.00	38.00	17,688	15,276	550	523	19.20	17.00	10,560	8,891
Montana	148	129	79.00	77.50	11,692	9,998	983	894	53.10	50.40	52,197	45,058
Wyoming	55	50	81.50	80.50	4,482	4,025	825	750	52.70	52.70	43,478	39,525
Colorado	237	219	73.50	72.00	17,420	15,768	1,150	1,096	44.70	44.80	51,405	49,101
New Mexico	85	76	68.00	67.00	5,780	5,092	1,145	1,090	39.70	40.10	45,456	43,709
Arizona	81	58	85.00	78.00	6,885	4,524	864	838	37.30	34.20	32,227	28,660
Utah	91	96	61.00	62.00	5,551	5,952	408	408	34.90	35.80	14,239	14,606
Nevada	26	25	76.00	76.00	1,976	1,900	470	472	39.50	39.70	18,565	18,738
Idaho	130	126	63.50	66.00	8,255	8,316	418	406	38.60	38.60	16,135	15,672
Washington	263	263	59.50	60.50	15,648	15,912	275	255	30.40	30.30	8,360	7,726
Oregon	222	216	55.00	55.00	12,210	11,880	577	553	37.30	32.20	21,522	17,807
California	591	568	67.00	69.00	39,597	39,192	1,636	1,558	38.10	36.30	62,332	56,555
United States	22,768	22,108	59.66	53.92	1,358,435	1,191,955	40,849	39,812	35.88	33.53	1,465,786	1,334,928

SHEEP.

Sheep: Number and value on farms January 1, 1916 and 1917, by States

State	Number (thousands) Jan. 1—		Average price per head, Jan. 1—		Farm value (thousands of dollars) Jan. 1—	
	1917	1916	1917	1916	1917	1916
Maine	157	160	$6.30	$4.80	$989	$768
New Hampshire	35	35	6.70	5.50	234	192
Vermont	100	100	7.30	5.90	730	590
Massachusetts	25	26	6.70	5.50	168	143
Rhode Island	5	6	7.20	5.90	36	35
Connecticut	18	18	7.60	5.80	137	104
New York	840	849	8.40	6.20	7,056	5,264
New Jersey	29	29	7.20	6.40	209	186
Pennsylvania	825	835	7.10	5.60	5,928	4,676
Delaware	8	8	5.90	5.30	47	42
Maryland	223	223	6.60	5.40	1,472	1,204
Virginia	686	700	6.50	4.90	4,459	3,430
West Virginia	715	720	6.60	5.10	4,719	3,672
North Carolina	140	155	3.90	3.20	546	496
South Carolina	30	30	3.20	2.70	96	81
Georgia	150	161	2.80	2.40	420	386
Florida	119	119	2.70	2.30	321	274
Ohio	2,944	3,067	7.20	5.40	21,197	16,562
Indiana	1,005	1,005	8.20	6.10	8,241	6,130
Illinois	898	907	8.20	5.90	7,364	5,351
Michigan	1,834	1,931	7.80	5.70	14,305	11,007
Wisconsin	645	664	7.50	5.30	4,838	3,519
Minnesota	541	536	7.60	4.80	4,112	2,573
Iowa	1,240	1,240	8.80	6.30	10,912	7,812
Missouri	1,370	1,416	7.70	5.80	10,549	8,213
North Dakota	250	240	7.40	5.10	1,850	1,224
South Dakota	658	604	7.40	5.20	4,869	3,141
Nebraska	381	374	7.50	5.40	2,858	2,020
Kansas	348	341	7.60	5.60	2,645	1,910
Kentucky	1,155	1,155	7.10	4.90	8,200	5,660
Tennessee	650	650	5.80	4.10	3,770	2,665
Alabama	121	119	3.20	2.60	387	309
Mississippi	193	208	3.00	2.50	579	520
Louisiana	240	185	2.90	2.30	696	426
Texas	2,328	2,156	4.40	3.70	10,243	7,977
Oklahoma	104	95	6.30	5.00	655	475
Arkansas	124	124	3.90	2.90	484	360
Montana	3;744	3,941	7.10	5.10	26,582	20,099
Wyoming	4,381	4,338	7.60	5.60	33,296	24,293
Colorado	1,950	1,839	7.50	5.20	14,625	9,563
New Mexico	3,300	3,440	5.80	4.30	19,140	14,792
Arizona	1,632	1,700	6.30	4.70	10,282	7,990
Utah	2,089	2,089	7.90	5.40	16,503	11,281
Nevada	1,455	1,532	8.20	5.80	11,931	8,886
Idaho	3,195	3,102	8.20	5.60	26,199	17,371
Washington	585	568	7.10	5.30	4,154	3,010
Oregon	2,484	2,435	8.10	5.20	20,120	12,662
California	2,524	2,450	6.70	5.00	16,911	12,250
United States	48,483	48,625	7.14	5.17	346,064	251,594

WOOL.

Wool: Product, by States, 1915 and 1916.

[Estimates of U. S. Department of Agriculture.]

States	Fleeces (000 omitted)		Weight per fleece		Wool production (000 omitted)		Price pound (monthly mean).	
	1916	1915	1916	1915	1916	1915	1916	1915
	Number.	Number.	Pounds.	Pounds.	Pounds.	Pounds.	Cents.	Cents.
Maine	130	135	6.5	6.3	850	850	35.0	28.1
New Hampshire	28	29	6.6	6.4	185	185	31.5	25.5
Vermont	78	83	7.4	7.1	580	590	33.9	27.3
Massachusetts	18	18	6.9	6.4	125	115	29.0	25.0
Rhode Island	5	5	5.0	5.0	25	25	32.3	25.8
Connecticut	14	15	5.4	5.3	75	80	31.0	24.3
New York	530	535	6.7	6.5	3,550	3,480	33.1	27.3
New Jersey	16	17	5.0	5.6	80	95	31.7	25.0
Pennsylvania	650	650	6.5	6.2	4,225	4,030	32.0	25.6
Delaware	5	5	6.0	6.0	30	30	31.5	24.0
Maryland	129	127	5.8	5.9	750	750	33.2	25.5
West Virginia	550	550	5.0	5.0	2,750	2,750	32.9	27.2
Kentucky	625	650	5.0	4.9	3,125	3,185	32.3	25.7
Ohio	1,950	2,000	7.0	6.8	13,650	13,600	32.5	27.1
Michigan	1,165	1,170	7.1	6.9	8,275	8,075	33.4	27.5
Indiana	650	690	6.8	6.8	4,420	4,690	32.8	26.4
Illinois	515	530	7.5	7.5	3,855	3,975	30.1	25.0
Wisconsin	335	350	7.5	7.2	2,510	2,520	30.4	25.4
Minnesota	385	380	7.0	7.0	2,695	2,660	27.5	21.8
Iowa	650	700	7.5	7.6	4,875	5,325	29.1	23.8
Missouri	680	730	6.8	6.7	4,625	4,890	29.9	24.6
Total	9,108	9,369	6.73	6.61	61,255	61,900	31.7	25.6
Virginia	378	390	5.0	4.7	1,900	1,835	32.6	25.8
North Caorlina	135	140	4.2	3.9	570	545	27.9	22.6
South Carolina	24	25	4.0	4.0	95	100	24.5	19.4
Georgia	165	175	3.0	2.6	495	460	26.5	22.0
Florida	111	107	3.1	3.1	345	330	28.2	23.9
Alabama	100	100	3.5	3.8	350	380	21.6	10.0
Mississippi	150	150	3.6	3.5	540	520	22.3	18.4
Louisiana	170	145	3.5	3.7	590	536	19.4	15.4
Arkansas	85	85	4.1	4.5	350	385	22.8	19.4
Tennessee	425	425	4.4	4.4	1,870	1,870	27.7	21.4
Total	1,743	1,742	4.08	4.00	7,105	6,961	25.4	20.7
Kansas	185	175	7.2	7.1	1,330	1,240	25.0	20.0
Nebraska	230	225	8.0	7.4	1,830	1,665	27.2	22.9
South Dakota	475	450	7.5	7.0	3,560	3,150	27.0	21.4
North Dakota	180	175	7.5	7.2	1,350	1,260	25.7	19.4
Montana	3,150	3,500	7.8	7.7	24,570	26,950	29.4	25.2
Wyoming	3,675	3,650	8.4	8.0	31,000	29,200	26.0	22.6
Idaho	1,980	1,935	7.6	7.9	15,000	15,285	27.7	22.8
Washington	555	525	8.6	8.7	4,750	4,560	25.9	19.4
Oregon	1,760	1,850	7.5	8.0	13,200	14,820	27.2	22.8
California	1,850	1,900	6.3	6.1	11,600	11,590	22.0	18.6
Nevada	1,340	1,210	7.5	7.9	10,000	9,500	21.7	20.0
Utah	2,080	2,000	7.2	7.5	15,000	15,000	24.8	20.8
Colorado	1,400	1,300	6.0	6.0	8,400	7,800	25.2	21.2
Arizona	915	950	6.5	6.3	5,950	5,985	26.2	20.0
New Mexico	3,200	3,325	5.7	5.6	18,240	18,620	22.8	18.5
Texas	1,800	1,800	5.7	5.4	10,250	9,750	23.0	17.4
Oklahoma	74	70	6.8	7.0	500	490	23.7	19.7
Total	24,849	25,040	7.10	7.06	176,530	176,865	25.3	20.7
United States	35,700	36,151	6.86	6.80	244,890	245,726	27.6	22.8
Pulled wool					43,600	40,000		
Total product					288,490	285,726		

SWINE.

Swine: Number and value on farms January 1, 1916 and 1917, by States.

State	Number (thousands) Jan. 1—		Average price per head, Jan. 1—		Farm value (thousands of dollars) Jan. 1—	
	1917	1916	1917	1916	1917	1916
Maine	100	102	$16.60	$12.00	$1,660	$1,224
New Hampshire	53	55	15.60	12.50	827	688
Vermont	113	113	13.00	10.30	1,469	1,164
Massachusetts	112	112	15.00	13.20	1,680	1,478
Rhode Island	14	15	14.50	11.00	203	165
Connecticut	58	59	17.50	13.60	1,015	802
New York	759	799	14.70	11.80	11,157	9,428
New Jersey	163	161	17.00	12.80	2,771	2,061
Pennsylvania	1,174	1,210	13.90	10.40	16,319	12,584
Delaware	60	61	11.60	9.00	696	549
Maryland	359	359	11.50	8.50	4,128	3,052
Virginia	1,023	1,023	9.20	7.00	9,412	7,161
West Virginia	380	378	10.00	9.00	3.800	3,402
North Carolina	1,550	1,550	9.70	7.80	15,035	12,090
South Carolina	920	870	9.50	8.50	8,740	7,395
Georgia	2,585	2,348	9.00	7.70	23,265	18,080
Florida	1,100	996	6.50	6.00	7,150	5,976
Ohio	3,527	3,713	12.20	9.00	43,029	33,417
Indiana	3,970	4,010	11.50	8.50	45,655	34,085
Illinois	4,444	4,489	13.70	9.00	60,883	40,401
Michigan	1,345	1,462	12.40	9.00	16,678	13,158
Wisconsin	2,060	2,142	14.30	9.00	29,458	19,278
Minnesota	1,733	1,716	14.50	9.50	25,128	16,302
Iowa	9,370	9,069	14.70	9.30	137,739	84,342
Missouri	4,280	4,505	10.00	7.10	42,800	31,986
North Dakota	650	706	13.00	9.00	8,450	6,354
South Dakota	1,432	1,314	15.50	10.10	22,196	13,271
Nebraska	4,309	4,266	14.00	9.40	60,326	40,100
Kansas	2,535	2,815	12.30	9.10	31,180	25,616
Kentucky	1,589	1,709	8.90	6.50	14,142	11,108
Tennessee	1,485	1,531	8.40	6.80	12.474	10,411
Alabama	1,850	1,715	8.50	7.60	15,725	13,034
Mississippi	1,698	1,617	7.50	6.20	12,735	10,025
Louisiana	1,584	1,553	9.20	7.30	14,573	11,337
Texas	3,229	3,197	9.50	7.70	30,676	24,617
Oklahoma	1,372	1,491	10.20	7.20	13,994	10,735
Arkansas	1,575	1,589	8.20	5.40	12,915	8,581
Montana	269	298	12.00	9.00	3,228	2,682
Wyoming	69	70	11.20	9.40	773	658
Colorado	352	320	12.00	8.20	4,224	2,624
New Mexico	101	91	10.50	9.00	1,060	819
Arizona	80	40	13.00	11.00	1,040	440
Utah	101	112	10.50	7.80	1,060	874
Nevada	37	40	11.00	9.00	407	360
Idaho	292	344	10.40	7.00	3,037	2,408
Washington	283	314	11.10	8.50	3,141	2,669
Oregon	315	370	10.00	7.10	3,150	2,627
California	994	947	10.10	8.40	10,039	7,955
United States	67,453	67,766	11.73	8.40	791,242	569,573

Winner of second prize in County Exhibit contest at the 1916 Iowa State Fair.

Winner of first prize in County Exhibit contest at the 1916 Iowa State Fair.

PART XIII

Directory of Associations and Organizations Representing Agricultural Interests in Iowa

Corn Belt Meat Producers' Association—President, A. Sykes, Ida Grove; Vice President, R. M. Gunn, Buckingham; Secretary, H. C. Wallace, Des Moines; Treasurer, Charles Goodenow, Wall Lake.

Farmers' Grain Dealers' Association of Iowa—President, B. Hathaway, Pierson; Vice President, C. H. Nelson, Garner; Secretary, Frank M. Myers, Fort Dodge; Treasurer, G. M. Dyer, Spencer.

Iowa Aberdeen-Angus Cattle Breeders' Association—President, H. H. Reed, Marengo; Vice President, Milt Tudor, Iowa City; Secretary-Treasurer, Carl A. Rosenfeld, Kelley.

Iowa Beef Producers' Association—President, G. H. Burge, Mt. Vernon; Vice President, W. B. Seeley, Mt. Pleasant; Secretary, E. B. Thomas, Audubon; Treasurer, C. S. Hechtner, Chariton.

Iowa Bee Keepers' Association—President, B. T. Bleasdale, Des Moines; Vice President, H. E. Roth, Denver; Secretary-Treasurer, Hamlin B. Miller, Marshalltown.

Iowa Corn and Small Grain Growers Association—President, J. H. Petty, Elliott; Vice President, Fred McCulloch, Hartwick; Secretary, H. L. Eichling, Ames; Treasurer, P. C. Taff, Ames.

Iowa Department of Agriculture—President, C. E. Cameron, Alta; Vice President, O. A. Olson, Forest City; Secretary, A. R. Corey, Des Moines; Treasurer, W. W. Morrow, Afton.

Iowa Draft Horse Breeders' Association—President, Wm. Crownover, Hudson; Vice President, Charles Irvine, Ankeny; Secretary, G. E. O'Brien, Des Moines; Treasurer, M. J. Nelson, Cambridge.

Iowa Hampshire Breeders' Association—President, Clayton Messenger, Keswick; Vice President, R. L. Pemberton, LeGrand; Secretary, F. F. Silver, Cantril.

Iowa Hereford Breeders' Association—President, Cyrus A. Tow, Norway; Vice President, R. W. Cassady, Whiting; Secretary-Treasurer, F. E. Brazie, Harlan.

Iowa Park and Forestry Association—President, Ellison Orr, Waukon; Vice President, Mrs. Francis E. Whitley, Webster City; Secretary, G. B. MacDonald, Ames; Treasurer, Mrs. H. J. Taylor, Sioux City.

Iowa Sheep Breeders and Wool Growers Association—President, Will Michael, Selma; Vice President, W. S. Merritt, Seymour; Secretary-Treasurer, V. G. Warner, Bloomfield.

Iowa Shorthorn Breeders' Association—President, Frank Toyne, Lanesboro; Vice President, C. E. Tilton, Maquoketa; Secretary-Treasurer, D. A. Jay, Blakesburg.

Iowa Shropshire Association—President, Carlos Fawcett, Springdale; Vice President, P. R. Lisher, Ames; Secretary-Treasurer, M. G. Thornburg, Ames.

Iowa State Dairy Association—President, W. B. Quarton, Algona; Vice President, W. H. Chapman, New Hartford; Secretary, F. W. Stephenson, Oelwein; Treasurer, P. W. Crowley, Des Moines.

Iowa State Highway Commission—Commissioners, A. Marston, Chairman, Ames; J. W. Holden, Scranton; H. C. Beard, Mt. Ayr; Chief Engineer, Thomas H. McDonald, Ames; Consulting Bridge Engineer, J. E. Kirkham, Ames.

Iowa State Poultry Breeders' Association—President, Joseph Dagle, Richland; Vice President, A. Stocker, Des Moines; Secretary-Treasurer, V. G. Warner, Bloomfield.

Iowa Swine Breeders' Association—President, F. J. Sexsmith, Orient; Secretary-Treasurer, M. P. Hancher, Rolfe.

Society of Iowa Florists—President, Harvey Lozier, Des Moines; Vice President, A. H. Smith, Boone; Secretary-Treasurer, Wesley Greene, Des Moines.

State Horticultural Society—President, W. B. Chapman, Correctionville; Vice President, G. H. Van Houten, Lenox; Secretary, Wesley Greene, Des Moines; Treasurer, F. O. Harrington, Williamsburg.

Western Grain Dealers' Association—President, S. W. Wilder, Cedar Rapids; Vice President, O. K. Morrison, South English; Secretary-Treasurer, George A. Wells, Des Moines.

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES AND FAIR ASSOCIATIONS IN IOWA.

Adair—Adair County Fair Association: President, L. E. Foster, Greenfield; Secretary, F. A. Gatch, Greenfield.

Adams—Adams County Agricultural Fair Association: President, S. C. Scott, Corning; Secretary, F. C. Reese, Corning.

Audubon—Audubon County Agricultural Society; President, F. L. Anderson, Ross; Secretary, John Horning, Audubon.

Allamakee—Allamakee County Agricultural Society: President, O. A. Helming, Waukon; Secretary, Geo. S. Hall, Waukon.

Benton—Benton County Agricultural Society: President, L. C. Eggleston, Vinton; Secretary, J. W. Hanna, Vinton.

Black Hawk—Dairy Cattle Congress: President, J. R. Vaughan, Waterloo; Secretary, E. S. Estel, Waterloo.

Black Hawk—Cedar Valley Fair and Exposition: President, W. H. Merner, Cedar Falls; Secretary, H. S. Stanbery, Cedar Falls.

Boone—Boone County Agricultural Society: President, Clinton McCaskey, Ogden; Secretary, W. D. Miller, Ogden.

Bremer—Bremer County Fair Association: President, J. W. Bennett, Janesville; Secretary, J. Q. Lauer, Waverly.

Buchanan—Buchanan County Fair Association: President, A. N. Todd, Independence; Secretary, A. G. Rigby, Independence.

Buchanan—Aurora Driving Park Association: President, C. H. Guild, Aurora; Secretary, W. M. Durfey, Aurora.

Buena Vista—Buena Vista County Agricultural Society: President, L. Christensen; Secretary, Roy H. Wilkerson, Alta.

Butler—Butler County Agricultural Society: President, John Coster, Shellrock; Secretary, O. F. Missman, Allison.

Calhoun—Calhoun County Fair Association: President, J. C. Hoag, Manson; Secretary, C. G. Kaskey, Manson.

Calhoun—Rockwell City Fair Association: President, Andrew Stewart, Rockwell City; Secretary, J. F. Hutchinson, Rockwell City.

Carroll—Carroll County Fair and Driving Park Association: President, Frank Beiter, Carroll; Secretary, Peter Stephany, Carroll.

Cass—Cass County Agricultural Society: President, J. O. Berry, Atlantic; Secretary, Carl E. Hoffman, Atlantic.

Cass—Massena District Fair: President, John Eblen, Massena; Secretary, Chas. McBride, Massena.

Cedar—Tipton Fair Association: President, B. E. Burgess, Stanwood; Secretary, C. F. Simmermaker, Tipton.

Cerro Gordo—North Iowa Fair: President, G. W. Grimm, Clear Lake; Secretary, Chas. H. Barber, Mason City.

Chickasaw—Chickasaw County Agricultural Society: President, P. H. Brannon, New Hampton; Secretary, F. D. Griffin, New Hampton.

Chickasaw—Big Four Fair Association: President, J. A. Yarger, Nashua; Secretary, C. L. Putney, Nashua.

Clay—Clay County Improvement Association: President, Roy G. Webb, Spencer; Secretary, E. S. Perry, Spencer.

Clayton—Clayton County Agricultural Society: President, H. Buckman, St. Olaf; Secretary, A. J. Kregel, Garnavillo.

Clayton—Elkader Fair and Track Association: President, W. W. Davidson, Elkader; Secretary, Gus H. Wilke, Elkader.

Clayton—Strawberry Point District Fair: President, J. W. Hesner, Strawberry Point; Secretary, R. W. Schug, Strawberry Point.

Clinton—Clinton County Agricultural Society: President, T. W. Lange, DeWitt; Secretary, G. H. Christensen, DeWitt.

Crawford—Crawford County Fair Association: President, Wm. Eggers, Arion; Secretary, O. M. Criswell, Arion.

Davis—Davis County Agricultural Society: President, A. R. Wray, Bloomfield; Secretary, H. C. Leach, Bloomfield.

Delaware—Delaware County Fair Association: President, A. M. Cloud, Manchester. Secretary, E. W. Williams, Manchester.

Des Moines—Burlington Tri-State Fair: President, Geo. S. Tracey, Burlington; Secretary, Geo. H. Holcombe, Burlington.

Dickinson—Dickinson County Agricultural Society: President, P. O. Bjorenson, Spirit Lake; Secretary, A. M. Johnson, Jr., Spirit Lake.

EMMET—Emmet County Fair: President, G. F. Moore, Estherville; Secretary, H. M. Lambert, Estherville.

FAYETTE—Fayette County Agricultural Society: President, J. S. Smith, West Union; Secretary, E. A. McIlree, West Union.

FLOYD—Floyd County Agricultural and Mechanical Society: President, W. E. Waller, Charles City; Secretary, John R. Waller, Charles City.

FRANKLIN—Franklin County Agricultural Society: President, B. C. Marts, Hampton; Secretary, S. A. Clock, Hampton.

FREMONT—Tabor Stock and Grain Association: President, Joe Dalton, Tabor; Secretary, R. J. Mawher, Tabor.

GREENE—Greene County Fair Association: President, M. M. Head, Jefferson; Secretary, E. C. Freeman, Jefferson.

GRUNDY—Grundy County Agricultural Society: President, O. S. Brasted, Grundy Center; Secretary, E. S. King, Grundy Center.

GUTHRIE—Guthrie County Agricultural Society: President, John Wilson, Menlo; Secretary, Wm. Edwards, Guthrie Center.

HANCOCK—Hancock County Agricultural Association: President, Anthony Baker, Britt; Secretary, H. C. Meyer, Britt.

HARDIN—Hardin County Agricultural Society: President, W. H. Scholfield, Eldora; Secretary, Geo. W. Haynes, Eldora.

HARRISON—Harrison County Agricultural Society: President, W. W. Latta, Missouri Valley; Secretary, A. B. Hasbrook, Missouri Valley.

HENRY—Henry County Agricultural Society: President, T. F. Campbell, Mt. Pleasant; Secretary, C. H. Tribby, Mt. Pleasant.

HENRY—Winfield Fair Association: President, Jesse Canby, Winfield; Secretary, Theodore Russell, Winfield.

HUMBOLDT—Humboldt County Agricultural Society: President, W. H. Edwards, Humboldt; Secretary, B. H. Wilder, Humboldt.

IOWA—Iowa County Agricultural Society: President, C. C. Clements, Marengo; Secretary, S. G. Snyder, Marengo.

IOWA—Victor District Agricultural Society: President, Henry Wahl, Victor; Secretary, J. W. Schultz, Jr., Victor.

IOWA—Williamsburg Fair Association: President, W. F. Harris, Williamsburg; Secretary, R. E. Jones, Williamsburg.

JACKSON—Jackson County Fair Association: President, A. L. Broxam, Maquoketa; Secretary, W. D. McCaffrey, Maquoketa.

JASPER—Jasper County Agricultural Society: President, C. F. Sauerman, Newton; Secretary, F. E. Meredith, Newton.

JEFFERSON—Jefferson County Agricultural Society: President, Sanford Zeigler, Sr., Fairfield; Secretary, Sanford Zeigler, Jr., Fairfield.

JOHNSON—Johnson County Agricultural Society: President, Sam Hunter, Iowa City; Secretary, A. A. Welt, Iowa City.

JONES—Jones County Agricultural Society: President, G. P. Rockstad, Monticello; Secretary, E. G. Hicks, Monticello.

JONES—Anamosa District Fair: President, W. D. Sheean, Anamosa; Secretary, S. E. Leam, Anamosa.

KEOKUK—What Cheer District Agricultural Society: President, James Stephenson, What Cheer; Secretary, Geo. A. Poff, What Cheer.

KOSSUTH—Kossuth County Agricultural Society: President, E. A. Wolcott, Algona; Secretary, S. D. Quarton, Algona.

LEE—Lee County Agricultural Society: President, E. C. Lynn, Donnellson; Secretary, Chris Haffner, Donnellson.

LEE—West Point District Agricultural Society: President, John W. Stewart, West Point; Secretary, John Walljasper, West Point.

LINN—Marion Inter-State Fair: President, A. R. Hutton, Marion; Secretary, E. J. Otterbein, Marion.

LINN—Wapsie Valley Fair Association: President, E. E. Henderson, Central City; Secretary, H. L. Lockwood, Central City.

LOUISA—Columbus Junction District Fair: President, W. H. Dean, Columbus Junction; Secretary, W. E. Whetstine, Columbus Junction.

LOUISA—Morning Sun Horse Show and Fall Festival: President, S. F. Wilson, Morning Sun; Secretary, W. H. McClurkin, Morning Sun.

LYON—Lyon County Agricultural Society: President, G. G. Macnab, Rock Rapids; Secretary, W. G. Smith, Rock Rapids.

MAHASKA—New Sharon District Agricultural Society: President, P. T. Cope, New Sharon; Secretary, C. L. Haworth, New Sharon.

MAHASKA—Southern Iowa Fair and Exposition: President, D. K. Unsicker, Wright; Secretary, H. H. Rosebrook, Oskaloosa.

MARION—Knoxville Fair Association: President, Arthur L. Avery, Knoxville; Secretary, E. H. Gamble, Knoxville.

MARION—Pella District Fair: President, C. Deilman, Pella; Secretary, A. W. DeBruyn, Pella.

MARSHALL—Eden District Agricultural Society: President, C. J. Buck, Rhodes; Secretary, H. M. Weeks, Rhodes.

MARSHALL—Marshall County Fair Association: President, G. F. Standberry, Gilman; Secretary, W. M. Clark, Marshalltown.

MILLS—Mills County Agricultural Association: President, Sherman Jones, Malvern; Secretary, G. H. White, Malvern.

MITCHELL—Mitchell County Agricultural Society: President, Gar Moody, Osage; Secretary, E. C. Miller, Osage.

MONONA—Monona County Fair Association: President, J. M. Hathaway, Turin; Secretary, Fred Marquis, Onawa.

MONROE—Monroe County Fair Association: President, W. B. Griffin, Albia; Secretary, A. E. Bellman, Albia.

MUSCATINE—Union District Agricultural Society: President, W. W. Anderson, West Liberty; Secretary, W. H. Shipman, West Liberty.

MUSCATINE—Wilton Fair Association: President, C. C. Kaufman, Wilton Junction; Secretary, H. Wildasin, Wilton Junction.

O'BRIEN—O'Brien County Agricultural Society: President, C. A. Watts, Sutherland; Secretary, R. J. Nott, Sutherland.

O'BRIEN—Sheldon District Fair Association: President, C. A. Myers, Sheldon; Secretary, C. R. Richards, Sheldon.

PAGE—Clarinda Fair Association: President, E. G. Strong; Secretary, J. C. Beckner, Clarinda.

PAGE—Shenandoah Fair Association: President, Chas. Aldrich, Shenandoah; Secretary, E. R. Woodford, Shenandoah.

POCAHONTAS—Big Four District Fair Association: President, H. A. Blizzard, Fonda; Secretary, E. A. Elliott, Fonda.

POTTAWATTAMIE—Pottawattamie County Fair: President, R. Frost, Avoca; Secretary, B. A. Krienke, Avoca.

POWESHIEK—Grinnell Fair Association: President, Ralph Sherman, Grinnell; Secretary, I. S. Bailey, Jr., Grinnell.

POWESHIEK—Poweshiek County Central Agricultural Society: President, W. M. McClure, Malcom; Secretary, E. A. King, Malcom.

SAC—Sac County Agricultural Association: President, L. E. Irwin, Sac City; Secretary, W. F. Weary, Sac City.

SHELBY—Shelby County Agricultural Society: President, Joseph F. Beh, Harlan; Secretary, L. H. Pickard, Harlan.

SIOUX—Sioux City Agricultural Society: President, A. Vande Meide, Orange City; Secretary, J. J. DeVries, Orange City.

STORY—Central Iowa Fair: President, C. L. Siverly, Ames; Secretary, E. H. Graves, Ames.

TAMA—Tama County Fair Association: President, E. P. Skrable, Elberon; Secretary, A. G. Smith, Toledo.

TAYLOR—Taylor County Fair Association: President, T. E. Anderson, Bedford; Secretary, C. N. Nelson, Bedford.

VAN BUREN—Milton District Agricultural Society: President, N. E. Guernsey, Milton; Secretary, F. M. Robinson, Milton.

WAPELLO—Eldon Big Four Fair: President, W. F. Haywood, Eldon; Secretary, H. R. Baker, Eldon.

WAPELLO—Wapello Live Stock Show: President, Charles Aringdale, Ottumwa; Secretary, Felix Evans, Ottumwa.

WARREN—Warren County Agricultural Society: President, J. E. Houghtaling, Indianola; Secretary, J. Fred Henry, Indianola.

WAYNE—Wayne County Agricultural Association: President, John Crouse, Corydon; Secretary, F. B. Selby, Corydon.

WAYNE—Sewal Fair Association: President, Everett Shriver, Sewal; Secretary, Loren Johnston, Sewal.

WINNEBAGO—Forest City Park and Fair Association: President, F. W. Russell, Forest City; Secretary, L. I. Aasgaard, Forest City.

WINNESHIEK—Winneshiek County Agricultural Society: President, G. F. Baker, Decorah; Secretary, E. J. Curtin, Decorah.

WOODBURY—Inter-State Live Stock Fair: President, F. L. Eaton, Sioux City; Secretary, Joe Morton, Sioux City.

WORTH—Worth County Agricultural Society: President, L. G. Hewitt, Northwood; Secretary, N. T. Christianson, Northwood.

WRIGHT—Wright County Agricultural Society: President, I. L. Walls, Clarion; Secretary, Ed Hood, Clarion.

FARMERS' COUNTY INSTITUTES AND SHORT COURSES IN IOWA.

Adair—President, D. J. Cowden, Adair; Secretary, A. J. Menefee, Adair.

Adair—President, W. A. Woodruff, Casey; Secretary, Rollie Romick, Casey.

Allamakee—President, O. A. Helming, Waukon; Secretary, Theodore Gronna, Waukon.

Appanoose—President, Joe E. Callen, Moravia; Secretary, S. A. Stuckey, Centerville.

Appanoose—President, Frank Swan, Plano; Secretary, W. B. Studebaker, Mystic.

Appanoose—President, L. B. Monroe, Exline; Secretary, E. E. Withrow, Exline.

Appanoose—President, W. T. Daniels, Moulton; Secretary, J. H. Carr, Moulton.

Appanoose—President, M. A. Stickler, Udell; Secretary, C. A. Hornaday, Udell.

Benton—President, John Moller, Blairstown; Secretary, M. F. Bruch, Blairstown.

Benton—President, J. W. Hanna, Vinton; Secretary, George Barkdoll, Vinton.

Black Hawk—President, W. D. Strayer, Waterloo; Secretary, E. M. Lichty, Waterloo.

Black Hawk—President, G. E. King, La Porte City; Secretary, Roy F. Hawkins, La Porte City.

Boone—President, E. S. Thorngren, Boxholm; Secretary, M. J. Lundvall, Boxholm.

Bremer—President, J. H. Carstensen, Tripoli; Secretary, A. D. Chapin, Tripoli.

Buchanan—President, J. B. Lux, Independence; Secretary, F. H. Wyrick, Jesup.

Buena Vista—President, Geo. M. Allee, Newell; Secretary, O. J. Grau, Newell.

Butler—President, L. Lucas, Greene; Secretary, M. McEnery, Greene.

Calhoun—President, A. W. Eshbaugh, Rockwell City; Secretary, Henry Parsons, Rockwell City.

Cass—President, J. O. Fudge, Atlantic; Secretary, H. R. Malone, Atlantic.

Cass—President, R. G. Mackrill, Griswold; Secretary, D. H. Scott, Griswold.

Cedar—President, L. B. Emerson, Massillon; Secretary, August Ruprecht, Massillon.

Cerro Gordo—President, R. A. Holman, Rockwell; Secretary, Wm. McArthur, Mason City.

Cherokee—President, Roy Little, Cherokee; Secretary, Glen Curtiss, Cherokee.

Cherokee—President, W. E. Libby, Washta; Secretary, G. F. Stratton, Washta.

CLARKE—President, J. C. Gardner, Osceola; Secretary, C. E. Nickle, Osceola.

CLAY—President, A. P. Cronk, Everly; Secretary, George Nugent, Everly.

CLAY—President, C. W. Varney, Dickens; Secretary, Lee Moore, Dickens.

CLAYTON—President, T. L. Hamlet, Edgewood; Secretary, Arthur Borton, Edgewood.

CLINTON—President, John Olson, Calamus; Secretary, C. N. Peterson, Calamus.

DALLAS—President, W. B. Fritz, Dexter; Secretary, L. P. Moore, Dexter.

DAVIS—President, R. W. Anderson, Pulaski; Secretary, C. G. Eby, Pulaski.

DECATUR—President, James F. Harvey, Leon; Secretary, J. W. Hurst, Leon.

DELAWARE—President, A. B. Holbert, Greeley; Secretary, F. P. Walker, Manchester.

DES MOINES—President, Willis S. Mathews, Danville; Secretary, Clinton Bolick, Manchester.

DICKINSON—President, W. A. Brunemeier, Lake Park; Secretary, C. B. Arnold, Lake Park.

DUBUQUE—President, Joseph Dehner, Cascade; Secretary, W. A. Fairburn, Cascade.

FAYETTE—President, O. M. Smith, Arlington; Secretary, Harrie W. Gleim, Arlington.

FLOYD—President, C. E. Staefler, Charles City; Secretary, Glen Dudley, Floyd.

FRANKLIN—President, Charles Allenson, Hampton; Secretary, Arthur E. Mallory, Hampton.

FREMONT—President, Leslie O. Ross, Farragut; Secretary, A. A. Van Ness, Sidney.

GRUNDY—President, C. J. C. Cold, Reinbeck; Secretary, A. J. Terrall, Reinbeck.

HAMILTON—President, H. H. Barnhart, Stratford; Secretary, J. B. Harrison, Stratford.

HANCOCK—President, James Manual, Britt; Secretary, Thomas Peterson, Britt.

HARDIN—President, J. M. Hunt, Ackley; Secretary, L. A. Hembd, Ackley

HARRISON—President, Fred Sternberg, Woodbine; Secretary, Mrs. W. W. Reeser, Missouri Valley.

HENRY—President, George Wright, Mt. Pleasant; Secretary, J. F. Kopp, Mt. Pleasant.

HOWARD—President, John T. Martha, Cresco; Secretary, Mrs. C. V. Johnson, Cresco.

IDA—President, W. P. Corrie, Ida Grove; Secretary, J. H. Moist, Ida Grove.

IOWA—President, J. H. Burgy, South Amana; Secretary, U. S. Butler, Williamsburg.

JACKSON—President, George W. Blake, Maquoketa; Secretary, L. L. Littlefield, Bellevue.

JASPER—President, C. A. Curry, Prairie City; Secretary, W. J. Telfer, Prairie City.

JASPER—President, L. C. Adams, Mingo; Secretary, Floyd Hulse, Mingo.

JEFFERSON—President, L. H. Alexander, Fairfield; Secretary, M. M. Allender, Fairfield.

JOHNSON—President, J. W. Justice, Iowa City; Secretary, E. S. Browning, Iowa City.

JONES—President, J. S. Armstrong, Martelle; Secretary, C. H. Brown, Martelle.

KOSSUTH—President, M. O. Thompson, Swea City; Secretary, Fred Walker, Swea City.

KOSSUTH—President, A. Schram, Titonka; Secretary, J. J. Cosgrove, Titonka.

LEE—President, W. E. Beebe, Wever; Secretary, E. C. Lynn, Donnellson.

LYON—President, L. M. Foote, Inwood; Secretary, J. T. Jenesen, Inwood.

LUCAS—President, J. L. Washburn, Derby; Secretary, DeWitt White, Derby.

LINN—President, T. W. Moody, Walker; Secretary, Will Horak, Walker.

LINN—President, Ransom Trimbull, Coggon; Secretary, M. L. Ware, Coggon.

MADISON—President, W. D. Patterson, Winterset; Secretary, L. L. Blomgren, Winterset.

MAHASKA—President, Harry R. Hicks, Oskaloosa; Secretary, F. W. Michener, Oskaloosa.

MARION—President, H. B. Clark, Pleasantville; Secretary, Chester Shawnee, Pleasantville.

MILLS—President, J. W. Carter, Glenwood; Secretary, Wayne Choate, Glenwood.

MITCHELL—President, George Decker, Stacyville; Secretary, Dana Danforth, Little Cedar.

MONROE—President, Isaac White, Albia; Secretary, J. O. Patton, Albia.

MONTGOMERY—President, C. L. Anderson, Stanton; Secretary, E. M. Coppage, Stanton.

MUSCATINE—President, J. F. McClean, Wilton Junction; Secretary, Frances A. Root, Wilton Junction.

PAGE—President, C. W. Kelley, Clarinda; Secretary, Agnes Samuelson, Clarinda.

PALO ALTO—President, Ralph King, Emmetsburg; Secretary, L. F. Place, Emmetsburg.

PALO ALTO—President, Wm. Penn, Graettinger; Secretary, Vincent Kelly, Graettinger.

POLK—President, Charles W. Britton, Altoona; Secretary, J. E. Reid, Altoona.

POLK—President, A. B. Curray, Runnells; Secretary, H. E. Brown, Runnells.

POLK—President, Chas. Walters, Mitchellville; Secretary, C. W. Marmon, Mitchellville.

POLK—President, W. B. Paine, Bondurant; Secretary, Harry Cross, Bondurant.

POTTAWATTAMIE—President, Max Bebensee, Council Bluffs; Secretary, A. H. Strohbehn, Treynor.

POWESHIEK—President, Chas. Hasley, Searsboro; Secretary, Earl Mincer, Searsboro.

POWESHIEK—President, W. W. Morgan, Guernsey; Secretary, F. B. Malcolm, Deep River.

POWESHIEK—President, O. D. Hall, Brooklyn; Secretary, J. W. Silcott, Brooklyn.

RINGGOLD—President, E. E. Norris, Diagonal; Secretary, Grant Stahl, Diagonal.

SAC—President, John Currie, Sr., Odebolt; Secretary, C. S. Cathcart, Odebolt.

SCOTT—President, Theodore Peckenschneider, Calamus; Secretary, H. C. Rock, Dixon.

SCOTT—President, J. V. Bowley, LeClaire; Secretary, Elmer Graham, Princeton.

SCOTT—President, A. P. Arp, Eldridge; Secretary, Errett Calderwood, Eldridge.

SHELBY—President, O. B. Heflin, Harlan; Secretary, C. N. Christensen, Harlan.

SIOUX—President, T. W. Searle, Hawarden; Secretary, B. T. French, Hawarden.

STORY—President, John Nelson, Roland; Secretary, H. E. Evenson, Roland.

TAMA—President, R. P. Young, Traer; Secretary, Fred Childs, Traer.

UNION—President, M. F. Stever, Creston; Secretary, J. T. Bunjan, Creston.

VAN BUREN—President, George V. Leffler, Hillsboro; Secretary, A. G. Roberts, Bonaparte.

WAPELLO—President, A. E. Albert, Eldon; Secretary, J. O. Eastburn, Eldon.

WAPELLO—President, W. C. Arnold, Ottumwa; Secretary, W. D. Nye, Agency.

WARREN—President, Joe McCoy, Indianola; Secretary, Ryle S. McKee, Indianola.

WEBSTER—President, Aaron Peterson, Harcourt; Secretary, Van Gabrielson, Harcourt.

WOODBURY—President, Chris Bush, Moville; Secretary, E. C. Haskell, Moville.

WORTH—President, E. H. Miller, Northwood; Secretary, Oscar Rustad, Northwood.

WRIGHT—President, W. C. Tyrell, Jr., Belmond; Secretary, A. L. Luick, Belmond.

INDEX

- Abortion in cows, article by Dr. Peter Malcolm ... 511
- Admissions, state fair—
  - Automobiles ... 4
  - Des Moines day ... 13
  - Soldiers of civil war ... 4
  - Vehicles ... 9, 16
- Advertising, state fair—
  - Billboard paper ... 13
  - Budget, comparative ... 5, 6
  - Hangers ... 2
- Agricultural activities, the state's part in, address by C. P. Norgord ... 105, 112
- Agricultural associations and organizations in Iowa ... 651, 660
- Agricultural convention, state—
  - Delegates ... 114, 116
  - Election of officers, state board of agriculture ... 116, 118
  - Program arranged ... 19
  - Proceedings ... 27, 118
- Agricultural department, state fair—
  - Awards ... 243, 250
  - County exhibits ... 7, 250
  - Horn of plenty ... 4
  - Individual farm exhibits ... 7, 250
- Alfalfa—
  - Acreage and total yield, by counties ... 599, 601
  - Average yield per acre and total yield for state ... 605
  - Value, farm, December 1, 1916 ... 605
- Amusements for state fair—
  - (See attractions.)
- Apples—
  - Bushels harvested on farms ... 588, 590
  - Production and value for the United States, 1910-1916 ... 639
- Appropriation, state, for insurance and support of office ... 2, 22
- Argentine—
  - A trip to, address by C. F. Curtiss ... 96, 105
  - Live stock in the, address by C. F. Curtiss ... 398, 409
- Attractions for state fair—
  - Automobile races ... 10
  - Aviatrix ... 13
  - Baby racing automobiles ... 15
  - Fireworks ... 9
  - Ford championship race ... 14, 18
  - Mule derby ... 8
  - Music ... 8, 9, 12
  - Pacing pony ... 15
  - Shows ... 8
  - Vaudeville ... 9
- Auditing committee meetings ... 16, 20
- Automobiles, admission fee at state fair ... 4
- Awards, protest ... 1, 2, 3

Baby health contest—
  Awards 239, 241
  Better baby week 3
  Clerical services 3
Bancroft, H. P., address on "Salt incorporation" 379
Barker, H. C., address on "Cow testing associations and demonstrations" .88, 96
Barley—
  Acreage, production and value for the United States, by states, 1916 .. 632
  For Iowa for ten and twenty-one year periods 616
    For Iowa, 1916 598
  Acreage and production for Iowa, by counties, 1916 .... 581, 593
Baxter, Stuart, address on "Experience with sheep" 432, 435
Beatty, Newell, essay on "What I saw and learned at the Iowa State Fair" 86, 88
Bishop, E. C., superintendent's report, educational department 23, 24
Blacksmith outfits, ordered sold 9
Board of agriculture—
  Meetings 4, 5, 6, 7, 8, 17, 20
  Resignations 5, 15
  Appointments to fill vacancies 5, 15
  Election of officers and district members 116, 118
    Secretary 20
    Treasurer 20
Bonds—
  Assistant treasurers, change makers and ticket sellers 15
  Secretary 2, 20
  Treasurer 2, 20
Boys' baby beef club 9
Boys' judging contest—
  Authorized for 1916 state fair 24
  Awards 260, 261
  Cup contributed by W. J. Kennedy 3
Boys' state fair camp, authorized for 1916 state fair 24
Butter—
  Creamery butter, remarks by state dairy commissioner 342, 343
  Price, average for twelve years 343
  Production and disposition of creamery butter in Iowa 364, 365
  Trade-mark butter 343, 344
Cameron, C. E.—
  Elected president state board of agriculture 116
  Address on "Games and concessions at county and district fairs" .. 119, 129
  President's address, state agricultural convention 27, 30
Cattle—
  "Buying feeding cattle," address by Charles O. Cessna 417, 419
  Number and value on farms, by counties, 1916 .... 607, 609
  Number and value on farms, by states, 1916-1917 645
  Number and value on farms in the United States, 1867-1917 644
  Total number, all ages, by counties, 1916 .... 607, 609
Cattle department, state fair—
  Awards 177, 203
  Boys' baby beef class 9
  Cow testing exhibit 13
  Milking Shorthorns 15
  Shorthorn futurities 25
  Stalls assigned 16
Cessna, Charles O., address on "Buying feeding cattle" 417, 419
Chappel, Dr. George M.—
  Annual report of Iowa Weather and Crop Bureau 514, 573
  Report to state agricultural convention 112, 114

- Check stand at fair grounds 12
- Child welfare exhibit 14
- Claims for lost exhibits 25
- Clover seed, acreage and total yield, by counties, 1916 ....610, 611
- Cockerill, Charles G., address on "Selling direct to the packer" 395, 398
- Committees—
  - Auditing 16, 20
  - Credentials, state agricultural convention 30, 114, 116
  - Executive (See executive committee)
  - Per diem and mileage 8, 18, 26
  - Resolutions, state agricultural convention 30, 79
  - Special 2, 3, 8
- Corey, A. R. (See secretary)
- Corn—
  - Acreage, production and total farm value for the United States, 1915-1916 623
    - For Iowa for ten and twenty-one year periods 613
    - For Iowa, 1916 594
  - Acreage and production for Iowa, by counties, 1916 ....581, 593
    - For the world, 1914-1916 ....621, 622
  - Popcorn, acreage and total yield, by counties, 1916 ....610, 611
  - Sweet, acreage and total tons gathered for canning 610, 611
- Corn Belt Meat Producers' Association—
  - Annual meeting 389, 435
  - Officers 651
- Concession department, state fair—
  - Superintendent and assistant superintendent appointed 6, 13, 14
  - Watchman 15
- County exhibits—
  - Awards 250
  - Premiums 7
- Cow testing associations and demonstrations, address by H. C. Barker ...88, 96
- Curtin, E. J., elected director, board of agriculture 117
- Curtiss, C. F.—
  - Address on "A trip to the Argentine" 96, 105
  - Address on "Live stock in the Argentine" 398, 409
- Dairy association, state, annual meeting (See Iowa State Dairy Association)
- Dairy commissioner's report—
  - Butter, creamery 342
    - Price, New York market 343
    - Trade-mark 343
  - Cheese 344
  - Concentrated feeding stuffs 323
  - Condensed milk 344
  - Corn, food value, comparative chart 337
  - Creamery business in Iowa 364, 365
  - Dairy field 341
  - Educational work 328
  - Eggs 330
  - Food efficiency 335
  - Ice cream 345
  - Inspectors 325, 363
  - Laboratory work 331
  - License clauses 327
  - Milk, condensed 344
    - Food value, comparative chart 338
    - Inspection 339
    - Licenses, city 362
  - Rulings and hearings 324
  - Separators, hand, in Iowa 366, 367

Sterilizer for farm dairy utensils 352
Weights and measures 332
Work of Iowa State Dairy Association 346, 351
Department needs 329
Dairy department, state fair—
Awards 241, 243
Building and equipment proposed 24
Davis, E. T., elected director, board of agriculture 117
Des Moines Electric Company, service for fair grounds 14
Dining halls, fair ground—
Coffee urn purchased and bills allowed, club dining hall 16, 18
Highland Park College, permanent building proposed 25
Dog show 6
Doty, S. W., address on "Federal market reports on live stock and meats" 429, 432
Douglas, Fred, address on "Benefits of fair to community and state" 132, 133
Dourine, state veterinarian's report 505, 506
Educational department, state fair—
Appropriation and classification 24, 25
Superintendent's report 23, 24
Eggs—
Production, by counties, 1916 .... 607, 609
Emigration—immigration, "Bread upon the waters," article by Ivanhoe Whitted 478, 482
Escher, Charles, Jr., elected director of board of agriculture 5, 117
Evergreen trees in Iowa, bulletin by G. B. McDonald 437, 464
Executive committee meetings..1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19
Fair, state (See Iowa State Fair)
Fair associations and agricultural societies, officers 652, 656
Fairs, county and district—
Association of County and District Fair Managers, meeting 119, 151
Attendance and admission fees 48
Benefits of fair to community and state, address by Floyd Douglas. 132, 133
Financial statements 36, 76
Games and concessions, address by C. E. Cameron 121, 129
Insurance, address by John Walljasper 119, 121
Iowa fairs of 1916, article from Greater Iowa 475, 477
Number of exhibitors, exhibits, and premiums paid 44
Receipts and disbursements 40
Spring meeting, address by J. P. Mullen 137, 141
Fair grounds—
Additional ground purchased 18, 19
Rented 3, 11
Bid on Dodd and Struthers buildings 18
Electric light equipment 14
Heating horse barn for sales 18
Improvements and repairs ordered 12, 16
Loan or removal of property 16
Motor truck purchased 17
Road oil purchased 15
Superintendent of grounds employed 24
Tanbark for stock pavilion 16
Farms—
Acreage occupied by farm buildings, public highways and feed lots. 588, 590
Acreage in pasture, garden, orchard, crops not otherwise enumerated and land not utilized 588, 590
Acreage, yield per acre and total yield of farm crops 591, 593, 599, 601, 610, 611
Number, average size, and total acreage 588, 590

  Number of horses, mules, cattle, sheep, swine and poultry on farms July 1, 1916 ....607, 609
  Silos, number on farms 588, 590
  Value of crops on farm December 1, 1916....594, 598, 602, 606
  Wages paid farm help 588, 590
Farmers' Grain Dealers' Association of Iowa, officers 651
Farmers' institutes—
  Financial statement 584, 586
  Officers 657, 660
  Remarks by secretary state board of agriculture 50
Faville, F. F., bill for legal services 19
Flax seed—
  Acreage, by counties 599, 601
  Acreage, production and value of Iowa crops for ten and twenty-one year periods 619
  Yield per acre and total yield 599, 601
Floricultural department, request for building improvements 6
Florists, Iowa Society of, officers 652
Fungus diseases of plants for 1916, article by L. F. Pammel 574, 578
Futurities—
  Draft horse for 1917 fair 3, 25
  Duroc Jersey 3, 7, 25
  Futurity day 4
  Iowa State Fair futurity 14
  Poland China 25
  Protest, draft horse futurity 1, 2, 3
  Shorthorn 25
  Western Horse Breeders'.... 12
Gibson, Dr. J. I., state veterinarian's biennial report 486, 513
Hawkeye Wireless Association, station at fair grounds 12
Hay—
  Acreage, by counties 599, 601
  Acreage, production and value of Iowa crop for ten and twenty-one year periods 618
    For the United States, 1916 638
  Value on farms December 1, 1916 ....603, 604
  Yield per acre and total yield 599, 601
Hogs (See swine)
Hog cholera—
  Control work in Dallas county, article by J. R. Mohler 511
  Does vaccination pay, article by Ivanhoe Whitted 484, 486
  Eradication through sanitary measures, state veterinarian's report.502, 505
  Number hogs lost by cholera, by counties 607, 609, 612
Holman, Charles W., address on "Co-operative packing plants" 419, 428
Horn of plenty, agricultural department 4, 9, 18
Horses—
  Average price on Chicago market, 1901-1916 643
  Number owned in Iowa July 1, 1916, by counties 607, 609
  Number and value on farms, 1916-1917, by states 642
  Number and value on farms in the United States, 1867-1917 641
Horse department—
  Awards 152, 175
  Program arranged 16
  Protest of awards 1, 2, 3
  Stalls assigned 16
Horticultural department, awards 250, 258
Insurance—
  County and district fairs, address by John Walljasper 119, 121
  On fair ground buildings 3, 78, 68
International Motor Contest Association, stock purchased 1

Iowa Aberdeen-Angus Breeders' Association, officers 651
Iowa at the International, article from Greater Iowa 474, 475
Iowa Bee Keepers' Association, officers 651
Iowa Beef Producers' Association—
  Class for baby beef 9
  Officers 651
Iowa Corn and Small Grain Growers' Association, officers 651
Iowa Department of Agriculture, officers ..... VII, 651
Iowa Draft Horse Breeders' Association, officers 651
Iowa Hampshire Breeders' Association, officers 651
Iowa Hereford Breeders' Association, officers 651
Iowa Park and Forestry Association, officers 651
Iowa Sheep Breeders' and Wool Growers' Association, officers 651
Iowa Shropshire Association, officers 651
Iowa's source of wealth XII
Iowa State Dairy Association—
  Address of welcome, Mr. Law 368, 370
  Buttermaker of tomorrow, address by C. E. Lee 372, 376
  Officers 652
  Opportunity available to buttermaker and patron, address by
    Hugh G. Van Pelt 383, 387
  Response to address of welcome, Mr. McMurray 370, 372
  Salt incorporation, address by H. P. Bancroft 379
  Work of association (See dairy commissioner's report)
Iowa State Fair—
  Admissions, grandstand and stock pavilion 73
  Assets and liabilities 66
  Attendance, comparative 73
  Attractions 8, 15
  Awards, baby health contest 239, 241
    Agricultural 243, 250
    Boys' judging contest 259, 261
    Dairy 241, 243
    Horticultural 250, 258
    Live stock 152, 224
    Poultry 225, 239
    Sheep shearing contest 224
    Spelling contest 241
  Boys' camp 24
  Boys' judging contest 3, 24
  Dates 24
  Decorations for buildings 15
  Exhibits, live stock, number 74, 75
  Exhibitors, number 74, 75
  Expense 4
  Expense other than premiums 71
  Inventory of fair grounds property 63, 65
  Insurance on buildings 78
  Lights 15
  Management 24
  Money borrowed 5, 9
  Pay rolls 17
  Premiums paid, comparative 70, 78
  Press reports 262, 302
  Railway rates 15
  Receipts, comparative 70
  Receipts and disbursements 54, 55, 62, 76, 77
  Special days 10
  Speed department, report 72

  - State accountant's report 66, 69
  - Ticket sales 69, 70
  - What I saw and learned at the Iowa State Fair, essay by Newell Beatty 86, 88
- Iowa State Highway Commission, officers 652
- Iowa State Horticultural Society, officers 652
- Iowa State Poultry Breeders' Association, officers 652
- Iowa Swine Breeders' Association, officers 652
- Iowa Weather and Crop Bureau—
  - Annual report 514, 573
  - Climate and crop reviews 550, 553
  - Climatology 514, 516
    - Comparative data for state, annual 546
    - Comparative data, 1890-1916 519, 521, 524, 527, 529, 531, 534, 537, 539, 541, 543, 545
    - Isotherms and prevailing winds 548
    - Killing frosts, dates 547
    - Precipitation, total for year 549
    - State data, monthly, for 1916 546
    - Summaries, monthly 516, 545
  - Crops, number of acres, by counties 566, 569
  - Crop reports, June, July, August and September 561, 563
  - Crop report, final 563, 564
  - Crop summary 565, 570, 573
  - Fungus diseases of plants for 1916, article by L. F. Pammel 574, 578
  - Weather and crop bulletins 553, 561
- Lamb, A. R., bulletin on "Silage and silage fermentation" 465, 472
- Law, Mr., address of welcome, Iowa State Dairy Association 368, 370
- Lee, C. S., address on "The buttermaker of tomorrow" 372, 376
- Legoe, T. C., elected director board of agriculture 117
- Live stock—
  - Exported from Iowa 507, 508
  - Imported into Iowa 506, 507
  - In the Argentine, address by C. F. Curtiss 398, 409
  - Selling direct to the packer, address by Charles G. Cockerill 395, 398
- McDonald, G. B., bulletin on "Evergreen trees for Iowa" 437, 464
- McMurray, Mr., address, Iowa State Dairy Association 368, 370
- Machinery department, space for mail order houses 10, 20
- Malcolm, Dr. Peter L., article on "Abortion in cows" 511, 513
- Maps—
  - Crops 594, 595, 596, 597, 598, 602, 603, 604, 605, 606
  - Hog cholera 484, 485
  - Isotherms and prevailing winds 548
  - Precipitation 549, 581, 582
- Market reports, federal, on live stock and meats, address by S. W. Dofy 429, 432
- Marshals for horse and cattle departments at state fair 16, 24
- Mohler, J. R., article on "Hog cholera control work in Dallas county" 511
- Money borrowed by state board of agriculture 5, 9
- Morrow, W. W.—
  - Annual report of treasurer 62, 63
  - Bond 2, 20, 25
  - Elected treasurer 20
  - Salary 20
- Mules—
  - Average price on Chicago market, 1901-1916 643
  - Number, all ages, owned in Iowa July 1, 1916, by counties 607, 609
  - Number and value on farms, 1916-1917, by states 642
  - Number and value on farms in the United States, 1867-1917 641

Mullen, J. P.—
  Address on "Spring meeting" 137, 141
  Elected director, board of agriculture 118
Norgord, C. P., address on "The state's part in agricultural activities".105, 112
Oats—
  Acreage, production and value for the United States, by states, 1915-1916 629
    For Iowa for ten and twenty-one year periods 614
    For Iowa, 1916 595
  Acreage and production for Iowa, by counties, 1916 591-593
    For the world, 1914-1916 ....627, 628
Oil, for fair ground roads 15
Olson, O. A., elected vice-president, board of agriculture 116
Packing plants, co-operative, address by Charles W. Holman 419, 428
Pammel, L. F., article on "Fungus diseases of plants for 1916" 574, 578
Peaches, production and value for the United States, 1910-1916 640
Pearson, R. A., address, Corn Belt Meat Producers' Association 409, 417
Per diem and mileage committee 8, 18, 26
Popcorn, acreage and total yield in Iowa, 1916 ....610, 611
Potatoes—
  Acreage, productions and value for the United States, 1916 638
    For Iowa for ten and twenty-one year periods 620
    For Iowa, 1916 606
  Acreage and production for Iowa, by counties, 1916 ....599, 601
    For the world, 1916 ....636, 637
Poultry department—
  Awards 225, 239
  Claims for loss by exhibitors 25
  Rental of coops 19
  Space for special exhibit 12
Premium list—
  Amount offered in various departments 7, 8
  Baby beef classification 9
  County exhibits 7
  Individual farm exhibits 7
  Graphic and plastic arts 10
  Revision 7
  Sheep 10
Public safety department—
  Guards engaged 16
  Superintendent 16
Railway rates for fair 15
Rye—
  Acreage, production and value for the United States, 1916 635
    For Iowa for ten and twenty-one year periods 617
    For Iowa, 1916 602
  Acreage and production for Iowa, by counties, 1916 ....599, 601
    For the world, 1914-1916 ....633, 634
Secretary, A. R. Corey—
  Bond 2, 20
  Elected secretary board of agriculture 20
  Report to board of agriculture 21, 23
  Report to agricultural convention 30, 78
    County and district fairs 32, 49
    Farmers' institutes 50, 584, 586
    Publicity department 31
    Short courses 50
    Stallion registration division 31
    Stallion show, spring 32
    State fair 50, 78

  - Salary 20
  - Superintendent of concessions 6
- Secretary, assistant 15
- Seick Tent and Awning Company, permit to erect building on fair ground. 3
- Selling direct to the packer, address by Charles G. Cockerill 395, 398
- Sestier Brothers, concession 3
- Sewer—
  - Connection 25
  - Estimate, final 11
  - Payment, final 13
  - Storm sewer 12
- Sheep—
  - Experience with, address by Stuart Baxter 432, 435
  - Number on farms, by counties, 1916 ....607, 609
  - Number shipped in for feeding 607, 609
  - Number and value on farms, by states, 1916-1917 846
  - Pastured on fair grounds 5, 11, 12, 16, 17, 18, 21
  - Wool, product by states, 1915-1916 647
    - Total pounds clipped 607, 609
- Sheep department—
  - Awards 215, 224
  - Shearing contest 224
- Sheldon, F. E., elected director board of agriculture 117
- Short courses—
  - Financial statement 583
  - Officers 657, 660
  - Remarks, secretary state board of agriculture 50
- Silage and silage fermentation, bulletin by A. R. Lamb 465, 472
- Silos, number on Iowa farms 588, 590
- Simpson, J. C., address on "The function of a state fair and its educational features" 80, 86
- Soldiers of civil war, free admission to state fair 4
- Speed department—
  - Iowa State Fair futurity 14
  - Sulkies purchased 15
  - Western Breeders' futurity.......... 15
- Spelling contest—
  - Appropriation for 6
  - Awards 241,
  - Medal 15
- Stallion show, spring 25
- State accountant's report 66, 69
- State Fair, Iowa (See Iowa State Fair)
- State Fair, its function and educational features, address by J. C. Simpson 80, 86
- State institutions' exhibit 13, 24
- Summers, J. F., resignation, director board of agriculture 5
- Sunday school at state fair 9
- Superintendents, state fair 1, 2, 6
- Superintendent of grounds, salary 24
- Swine—
  - Number on Iowa farms July 1, 1916, by counties 607, 609
  - Number lost by cholera, by counties 607, 609, 612
  - Number and value on farms 1916-1917, by states 648
- Swine department
  - Awards 203, 215
  - Futurities 25
  - Mule foot, classification for 25
  - Pens assigned 16

Sykes, A., president's address, Corn Belt Meat Producers' Association ..389, 394
Timothy seed, acreage and total yield, by counties, 1916 ....610, 611
Treasurer's annual report, W. W. Morrow 62, 63
Van Pelt, Hugh G., address on "The greatest opportunity available to buttermaker and patrons" 383, 387
Veterinary department, state, biennial report 486, 513
  Abortion in cows 511, 513
  Dourine 505, 506
  Finances of department 510
  Foot and mouth disease 489, 501
  Hog cholera, control work in Dallas county 511
    Eradication 502, 505
  Live stock imports and exports 506, 508
  Veterinary examinations 508, 510
Wages paid farm help in Iowa, 1916 ....588, 590
Walljasper, John, address on "Insurance" 119-121
Weather and crop report, state bureau (See Iowa Weather and Crop Bureau)
Weather data, Ames station 579, 582
Western Grain Dealers' Association, officers 652
Wheat—
  Acreage, production and value for the United States, 1915-1916 626
    For Iowa for ten and twenty-one year periods 615
    For Iowa, 1916 ....596, 597
  Acreage and production for Iowa, by counties, 1916 ....591, 593
    For the world, 1914-1916 ....624, 626
Whitted, Ivanhoe—
  Article on emigration—immigration, "Bread upon the waters"....478, 482
    "Vaccination of swine, does it pay?" 484, 486
Wireless telegraph station at fair grounds 12
Wool—
  Product by states, 1915-1916 647
  Total pounds clipped, by counties 607, 609

New York Botanical Garden Library
3 5185 00260 8527